WATER WORKS & SEWERAGE

"THESE SEWERS OF PARIS"
(á la Hollywood)

As our armed forces advance island after island in the South Pacific, on each of these stepping stones to Tokio they encounter an enemy more dangerous than the treacherous Japs.

It is water-borne disease. In past wars this killer has caused more casualties than the most deadly weapons devised by man!

Today, chlorine and its compounds help to protect our fighting men against many forms of this menace. And for this important purpose, and other vital uses, Penn Salt supplies the army and navy with this important chemical.

In camps, during troop transportation, and in the field, chlorine sanitizes water for drinking and bathing. Its compounds serve bactericidal uses in field and base hospitals—in laundries, for bleaching and sanitizing purposes—in footbaths as a safeguard against common fungus infections.

These needs take a great deal of the Penn Salt output of chlorine and chlorine compounds. However, our concentration on this urgent wartime service has provided us with a fund of experience and increased facilities which will be turned to serving our peacetime customers even more satisfactorily when the war is won.

Penn Salt manufactures

Liquid Chlorine

for water sanitation and sewage treatment

Also

Perchloron* • Anhydrous Ammonia
Filter Alum • Ferric Chloride
Sodium Aluminate • Chloride of Lime
Caustic Soda and other products

*Trade-mark Reg. U. S. Pat. Off.

PENNSYLVANIA SALT MANUFACTURING COMPANY

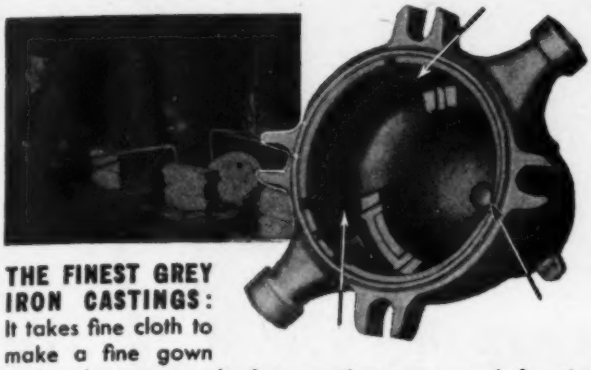
Chemicals

1000 WIDENER BUILDING, PHILADELPHIA 7, PA.

New York • Chicago • St. Louis • Pittsburgh • Minneapolis • Wyandotte • Tacoma

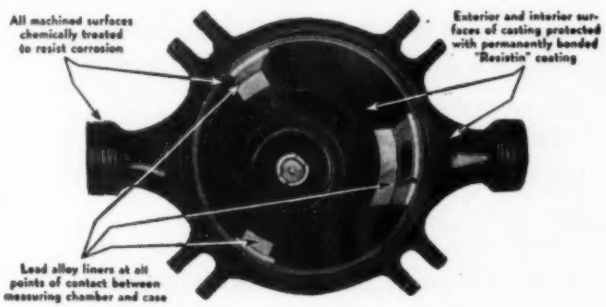
WATER WORKS & SEWERAGE, November, 1943. Volume 90, Number 11. Published monthly by Gillette Publishing Co., 330 South Wells Street, Chicago, Ill. Per copy, 25c. Subscription rate, United States, $2.00 per year; Canada, $2.00 per year; Foreign, $3.00 per year. Entered as Second Class Matter, June 2, 1931, at the Post Office at Chicago, Ill., under act of March 3, 1879.

TRIPLE PROTECTION FOR CAST IRON CASE



THE FINEST GREY IRON CASTINGS: It takes fine cloth to make a fine gown and only top grade iron castings are used for the Victory. Note the recesses cast in the interior walls to hold the babbitting that forms the protective liners between outer case and measuring chamber.

POURING LEAD ALLOY LINERS: View shows the interior of the Victory case after the lead alloy liners have been poured but before machining. This lining (patent applied for) provides a perfect jointing surface to prevent corrosion which would make removal of interior parts difficult.


All machined surfaces chemically treated to resist corrosion
Exterior and interior surfaces of casting protected with permanently bonded "Resistin" coating
Lead alloy liners at all points of contact between measuring chamber and case

COMPLETE 3-WAY PROTECTION: The three-way method of covering the cast iron surfaces of the Victory, detailed above, provides a fully rust-proof design; one that is treated, coated and laboratory tested to assure protection both for the duration and for years to come.

in

THE Empire VICTORY Meter

PERFECTION is only an ensemble of detail. In the Empire Victory, the care and attention that have been devoted to even the most minute details put this meter head and shoulders above the rank and file of other so-called war model meters.

The protection afforded the cast iron case against rust and corrosion is an outstanding example of design perfection. Not content with providing a mere "duration" stop-gap for bronze cases, Pittsburgh-National technicians perfected a three-way method of sealing the casting and machined surfaces to assure a permanency obtainable in no other make.

The "crown" of the Victory Meter is the all-glass register box—another development of Pittsburgh-National research.

On the operating side, this meter has the time proven Empire oscillating piston design, unequalled for accuracy and long life. Here, too, such details as a snap joint measuring chamber and the use of only three interior bronze castings that are assembled without screws, provide simplicity and compactness with an accessibility and ease of maintenance that are appreciated in the meter shop.

THE Empire VICTORY METER

A Fully Protected Iron Case Water Meter with Clear Vision All-Glass Register Box

PITTSBURGH EQUITABLE METER COMPANY

BOSTON BROOKLYN BUFFALO CHICAGO COLUMBIA HOUSTON KANSAS CITY

MERCO NORDSTROM VALVE COMPANY
Main Offices, Pittsburgh, Pa.

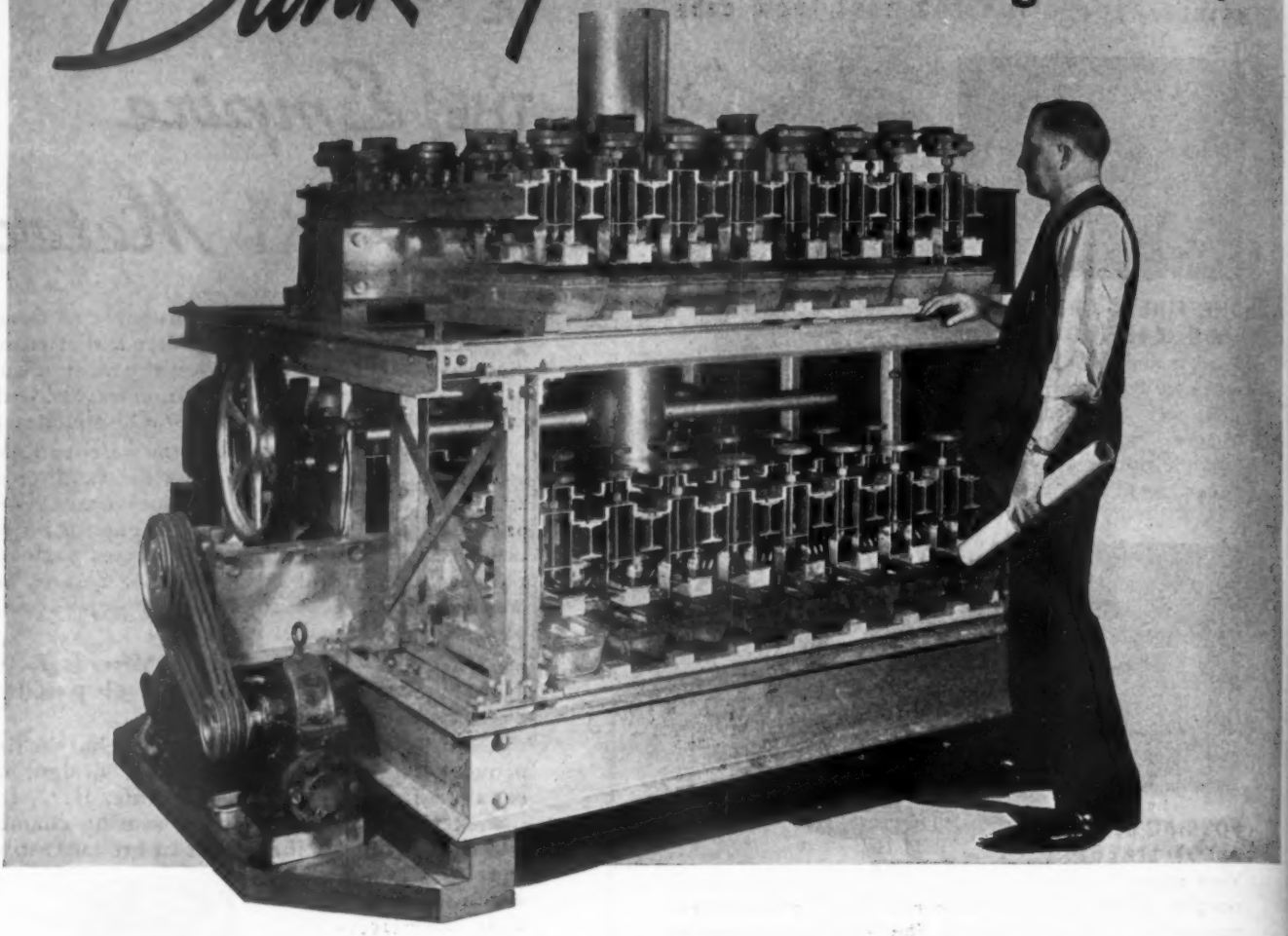
LOS ANGELES MEMPHIS NEW YORK PITTSBURGH SAN FRANCISCO SEATTLE TULSA

NATIONAL METER DIVISION, Brooklyn, N. Y.

INVEST TODAY IN BONDS FOR VICTORY

Water Meters

Dunking makes a tough test



. . . but apparatus like this proves Alcoa Aluminum Alloys before you put them to work

Suppose you were planning equipment that was to be wet by a liquid some of the time. You'd want to be sure the construction material you selected could stand up under such treatment. Well, here's a machine, in constant use at Aluminum Research Laboratories, which does this kind of testing.

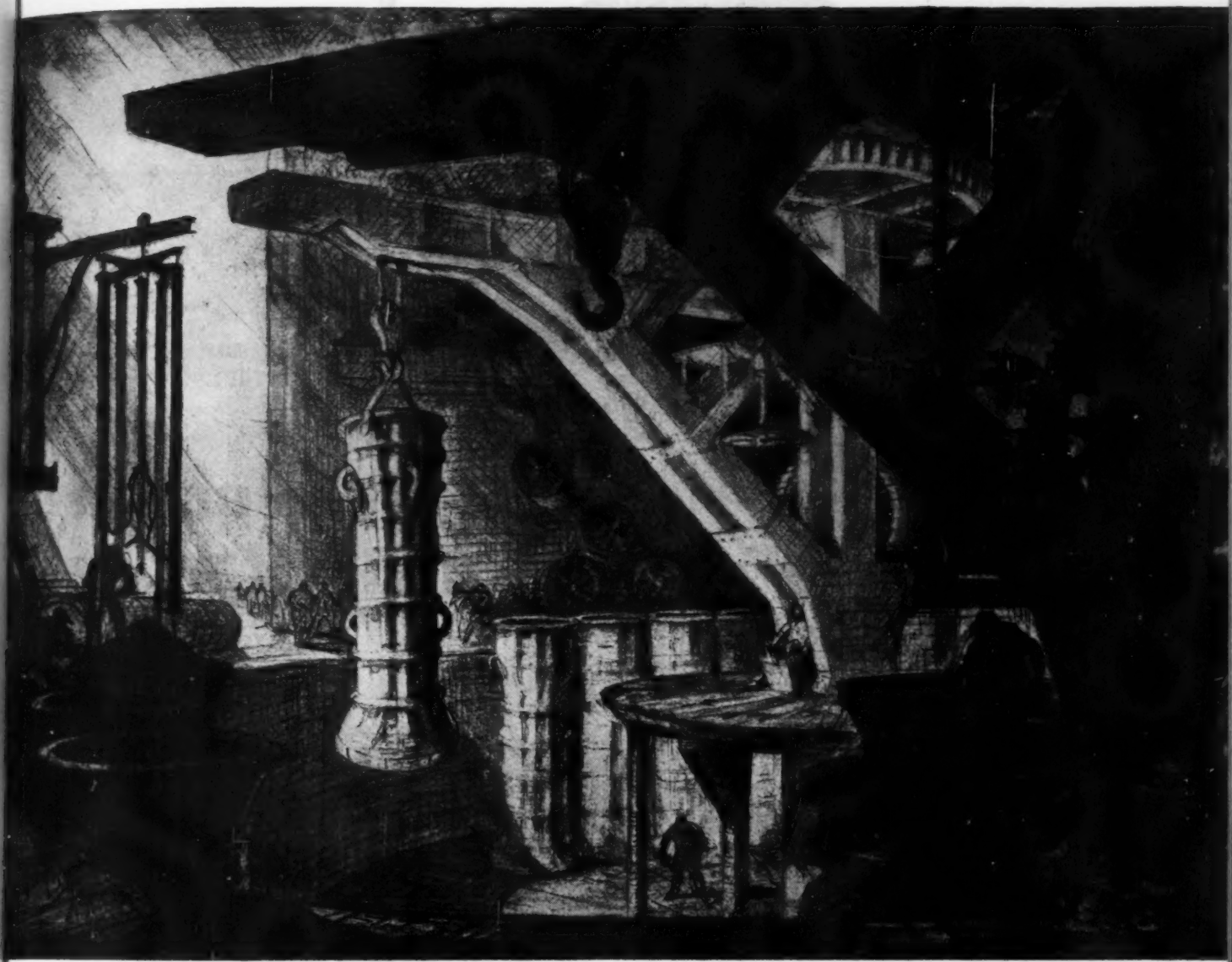
Dozens of samples are tested simultaneously; different alloys in various forms, extrusions, castings, rolled shapes and sheet. Stressed and unstressed pieces are placed side by side. At regular intervals, the machine "dunks" them into the liquids to be encountered in service, then pulls them out. A housing (not shown here) around the machine makes it possible to keep atmospheres at temperatures and humidities simulating service conditions.

Day after day this test goes on, until we can say—"There's the Alcoa Aluminum Alloy best suited to your job."

This pre-testing, like dozens of other similar services available to Alcoa's customers, helps account for the better performance of Alcoa Aluminum when it gets on a job. It's another reason why those postwar specifications you're writing should read, "ALCOA ALUMINUM". ALUMINUM COMPANY OF AMERICA, 1955 Gulf Building, Pittsburgh, Pa.

ALCOA ALUMINUM

Big pipe made here



A casting pit for large diameter pipe, drawn by Hugh Ferriss.

This drawing shows a pit in one of our foundries producing large diameter cast iron pipe. We can furnish pit cast pipe in diameters 2-inch to 84-inch in accordance with all standard specifications or to meet engineers' special requirements. Pipe can be made with bell-and-spigot, mechanical, flanged or flexible joints — or with plain ends. We also manufacture Super-de Lavaud centrifugally cast pipe in diameters from 3-inch to 24-inch, with bell-and-spigot or mechanical joints or plain ends, and have stocks on hand for immediate shipment. Fittings for these types of pipe can be made promptly in our special fittings foundries.

UNITED STATES PIPE & FOUNDRY CO.

General Offices: Burlington, New Jersey. ***Plants and Sales Offices throughout the U. S. A.***

Mr. Water Works Official . . . Hear ! . . Hear !

Strangers within the gates of your city are greatly impressed by your roads, transportation, and other public facilities, but it is your water supply that affects them most. One of the things that gives a lasting impression of a city is the palatability of its water supply.

But more important than transients, are your regular taxpayers who drink or otherwise use your water throughout the various seasons of the year. They depend on you to see that they receive palatable drinking water spring, summer and winter regardless of drought or flood. The one sure way to make certain of this is to keep a supply of AQUA NUCHAR Activated Carbon on hand at all times, ready to be applied at a moment's notice.

A survey of 842 American cities using Activated Carbon in their water plants shows an annual cost of but 2c per person—investigate the possibilities of using Aqua Nuchar in your city—its use results in clear, palatable drinking water.

BLUEPRINT NOW!

But above all, remember there is a war yet to be won, necessitating keeping your plant in continuous operation.

NUCHAR

INDUSTRIAL CHEMICAL SALES

DIVISION WEST VIRGINIA PULP & PAPER COMPANY

230 PARK AVENUE, NEW YORK 17, N.Y. · 35 E. WACKER DRIVE, CHICAGO 1, ILLINOIS · 748 PUBLIC LEDGER BLDG., PHILADELPHIA 6, PA. · 844 LEADER BLDG., CLEVELAND 14, OHIO

Straight From

PLANT SUPERINTENDENTS

THEIR PROBLEMS*— OUR SOLUTION Proven by Years of Successful Service

HANDLING SCREENINGS

"Our bar screen is mechanically cleaned and the large screenings lifted to a trough in buckets. The holes in the buckets designed to dewater the screenings are too small and become clogged with grease—result, no drainage. Perhaps the manufacturers thought the holes were large enough, but I think it would help if they actually try out designs in the field before marketing them."

Comminutors eliminate manual labor, health hazards and nuisances in handling sewage screenings by subsurface screening and cutting all sewage solids into small particles, which settle in the primary tank. Complete dimensional layouts and sewer flow curves in Bulletin 185.

RAW SEWAGE PUMP CLOGGING

"Our pumps clog up quite often with rags that slip through the screens. We have to take the pumps apart and clean them on the average of every two weeks. What we need is a means of grinding the rags on the screens, or pumps that are easier to clean, or both."

Flush-Kleen Raw Sewage Pumps will handle rags without clogging. They cannot clog, because rags do not reach the pump impellers. Bulletin 122 gives complete details on how Flush-Kleens operate.

SLUDGE PUMPING

"We have had a problem of sludge overflowing from the piston on the sludge pumps. It not only messed up the floor but went into the cylinder and got in the oil. The pump was equipped with an angle iron trough to catch most of the sludge but even that was messy and we had to keep the building closed to keep the flies out."

Scru-Peller Primary Sludge Pump makes sludge pumping as easy and clean as clear-water pumping. It is a centrifugal pump with a screw feed and cutting edges all the way through the pump. There are ball bearings on both sides of the impeller. The pump is built sturdy for severe shocks. Ask for Bulletin 190.

*Problems submitted to Water Works and Sewerage by its readers.

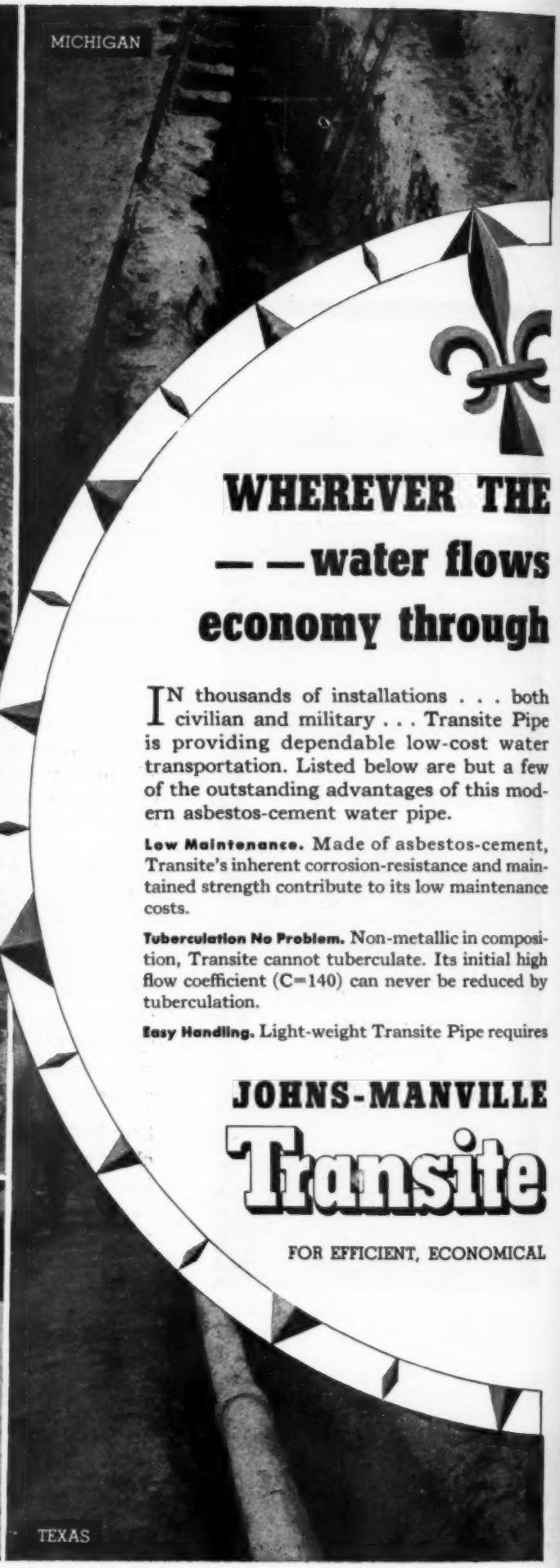
CHICAGO PUMP COMPANY

SEWAGE EQUIPMENT DIVISION

2300 WOLFRAM STREET — **CHICAGO 18, ILLINOIS**

Electric Pumps: Circulating, Bilge, Scru-Peller, Flush-Kleen, Plunger, Fire, House, Condensation, Vacuum.

Swing Diffusers, Stationary Diffusers. Mechanical Aerators, Combination Aerator-Clarifiers, Comminutors.



WHEREVER THE — —water flows economy through

IN thousands of installations . . . both civilian and military . . . Transite Pipe is providing dependable low-cost water transportation. Listed below are but a few of the outstanding advantages of this modern asbestos-cement water pipe.

Low Maintenance. Made of asbestos-cement, Transite's inherent corrosion-resistance and maintained strength contribute to its low maintenance costs.

Tuberculation No Problem. Non-metallic in composition, Transite cannot tuberculate. Its initial high flow coefficient (C=140) can never be reduced by tuberculation.

Easy Handling. Light-weight Transite Pipe requires

JOHNS-MANVILLE

Transite

FOR EFFICIENT, ECONOMICAL

COMPASS POINTS with efficiency and J-M Transite Pipe

fewer men for handling. Only the larger sizes need mechanical handling equipment.

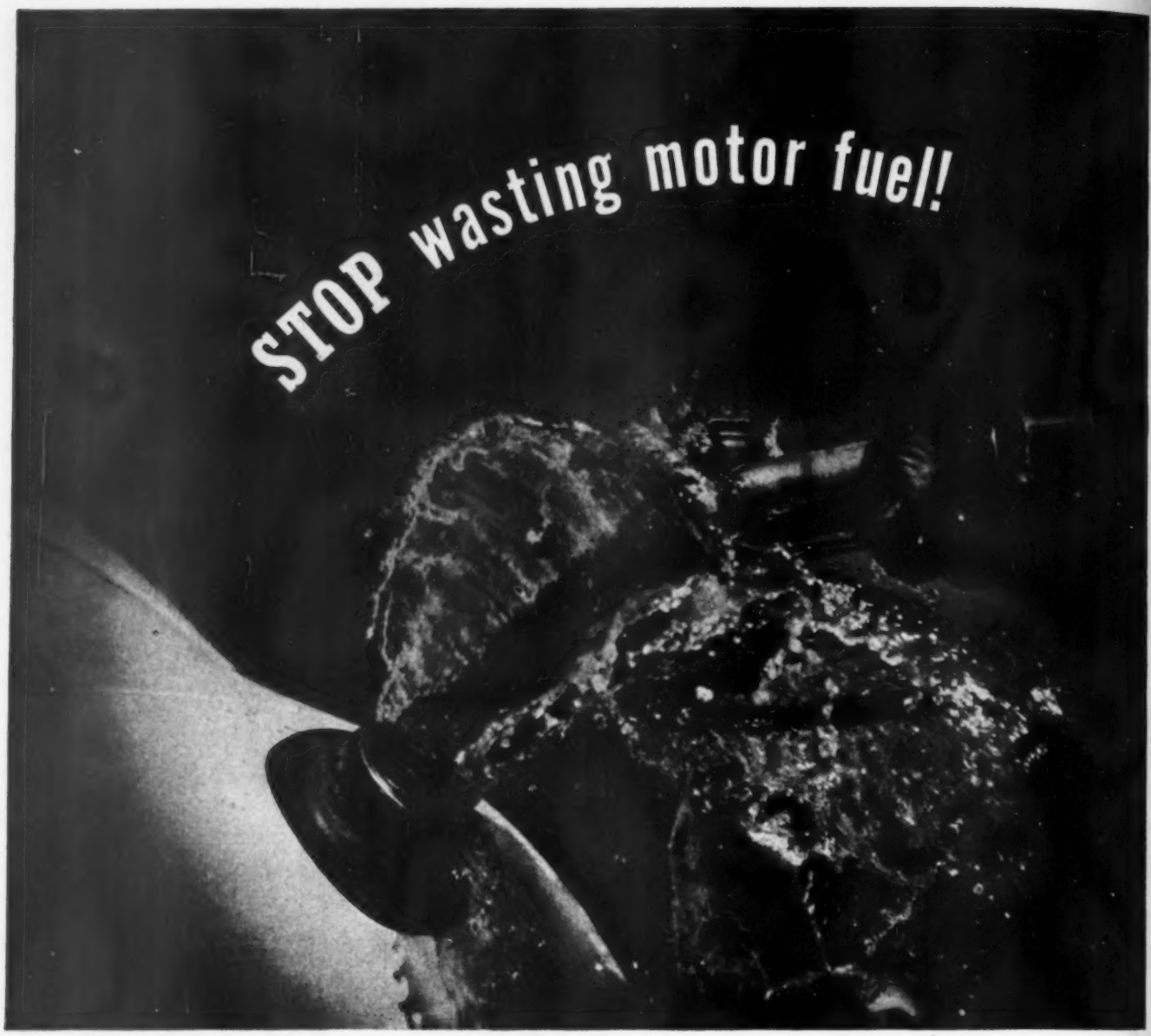
Rapid Assembly. Even unskilled crews can form tight joints easily and quickly with the Simplex Coupling.

Tight, Flexible Joints. Wide sweeps can be made with straight lengths because the Simplex Coupling stays tight even when the line is deflected as much as 5° at each joint.

Transite Pipe is available for both military and essential civilian needs. Get the complete facts today by writing for Transite Pipe Booklet TR-11A. For information on Transite Sewer Pipe for more efficient sewage disposal systems, ask for TR-21A. Address: Johns-Manville, 22 East 40th Street, New York, 16, N. Y.

Asbestos
Pipe
JOHNS-MANVILLE JM PRODUCTS

WATER AND SEWER LINES



RING-FREE Motor Oil saves fuel 2 ways

RING-FREE REMOVES CARBON. Carbon on pistons, rings, valves decreases motor efficiency—leads to loss of power—wastes fuel. Macmillan RING-FREE Motor Oil *removes carbon* while the motor runs! That means better motor lubrication and substantial fuel savings.

RING-FREE REDUCES FRICTION. The 2nd thing RING-FREE does to save fuel is reduce motor friction fast! That releases more power to the drive shaft and really cuts fuel waste. Here's proof: In 1094 certified road tests, with various makes of owner driven cars, the average saving of *gasoline* was 1.3 miles per gallon after crankcases had been drained and refilled with RING-FREE Motor Oil. In many types of *Diesel* operations, as much as 25% reductions in operating costs (including fuel and maintenance) are reported. At the same time, oil consumption is reported decreased. Remember saving fuel is important — but beyond that, when it's better motor lubrication that saves fuel it also means a reduction of motor wear.

MACMILLAN PETROLEUM CORP.

60 W. 50th, New York; 624 S. Michigan Av., Chicago; 530 W. 6th, Los Angeles

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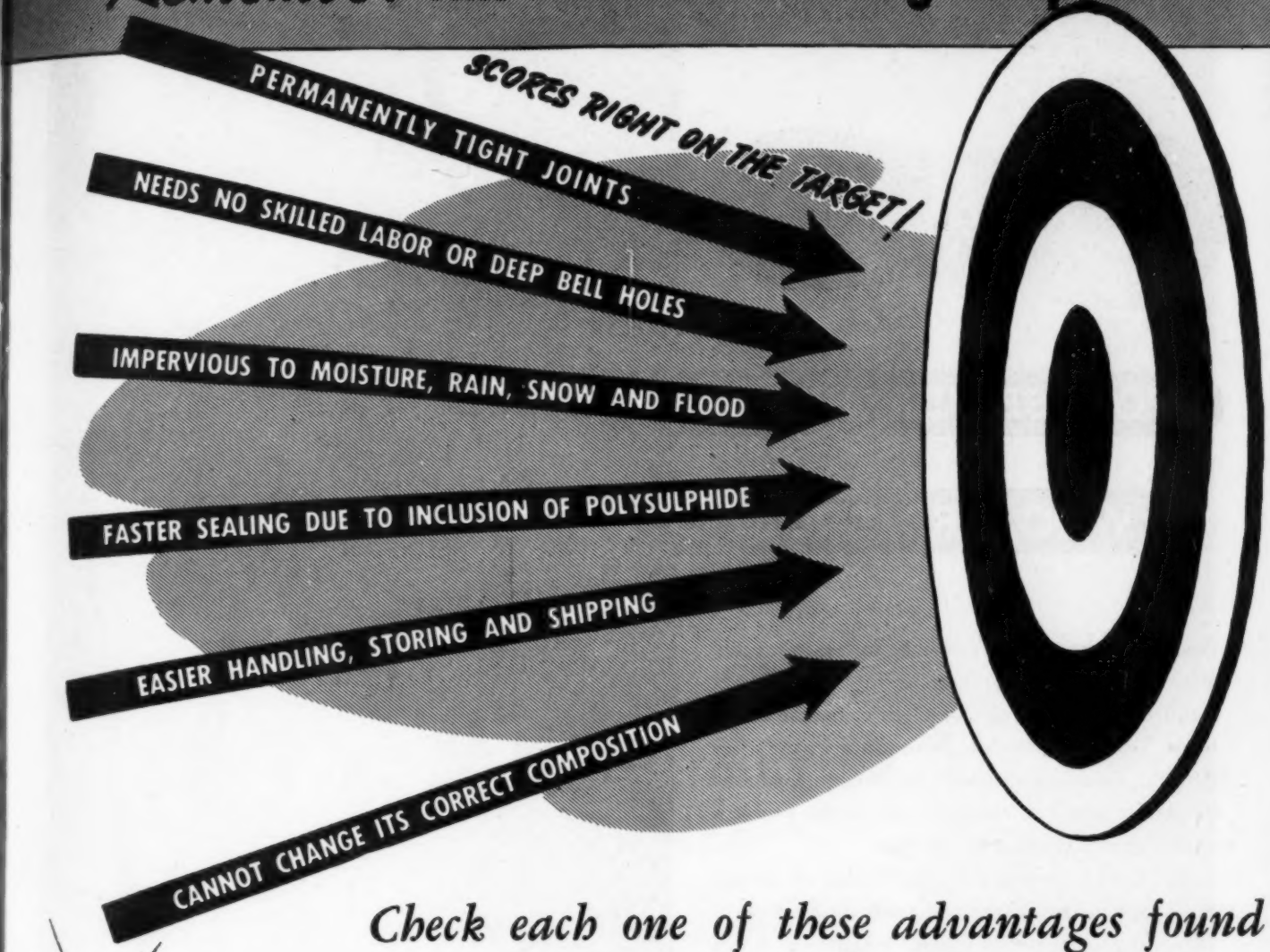
REDUCES WEAR BY REDUCING FRICTION

GETTING READY TO LAY BELL AND SPIGOT WATER LINES?

Remember This Different Jointing Compound


SCORES RIGHT ON THE TARGET!
PERMANENTLY TIGHT JOINTS
NEEDS NO SKILLED LABOR OR DEEP BELL HOLES
IMPERVIOUS TO MOISTURE, RAIN, SNOW AND FLOOD
FASTER SEALING DUE TO INCLUSION OF POLYSULPHIDE
EASIER HANDLING, STORING AND SHIPPING
CANNOT CHANGE ITS CORRECT COMPOSITION

*Check each one of these advantages found in total only in Tegul-*MINERALEAD

. . . as a saver of time, trouble and hard cash

Expect jointing you make with *Tegul*-MINERALEAD to stand up under rough going, heavy vibration and sudden temperature changes. You won't be disappointed.

Expect to be still further "in pocket" because jointing with *Tegul*-MINERALEAD can proceed quickly in any terrain, is "flexible" to meet every condition likely to be encountered and, in the experience of users, stand up for years without need of special attention.

★ ★ ★ ★ ★

Tegul-MINERALEAD is delivering service in 100% measure in temperatures ranging from Southern summer heat to 30° and more below zero. Lines on the shore of a West Coast city have withstood the pounding of surf and the rise and fall of Pacific tides for more than fourteen years without developing trouble of any kind.

Write for more information about the advantages and all-around economy of this different jointing compound in ingot form. For Technical Bulletin No. W-11, write us here at Mertztown. For field service, address the Atlas representative at our office nearest you.

Tegul-MINERALEAD

THE ATLAS MINERAL PRODUCTS COMPANY

of Mertztown, Penna. Pennsylvania

The House of Jointing Materials

*ATLANTA 3, Ga., 610 Red Rock Bldg.
*CHICAGO 1, Ill., 333 No. Michigan Ave.
*DALLAS 5, Tex., 3921 Purdue St.
*DETROIT 2, Mich., 2970 W. Grand Blvd.
*JACKSONVILLE 5, Fla., 1463 Talbot Ave.
*KANSAS CITY 2, Kan., 1913 Tauromee Ave.
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PITTSBURGH 10, Pa., 4656 Old Boston Rd.
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*LOS ANGELES 12, Cal., 817 Yale St.
*SEATTLE 14, Wash., H. D. Fowler Company P. O. Box 3084

*Stocks carried at these points

FOR SEWER ENGINEERS

WHO ARE LOOKING AHEAD

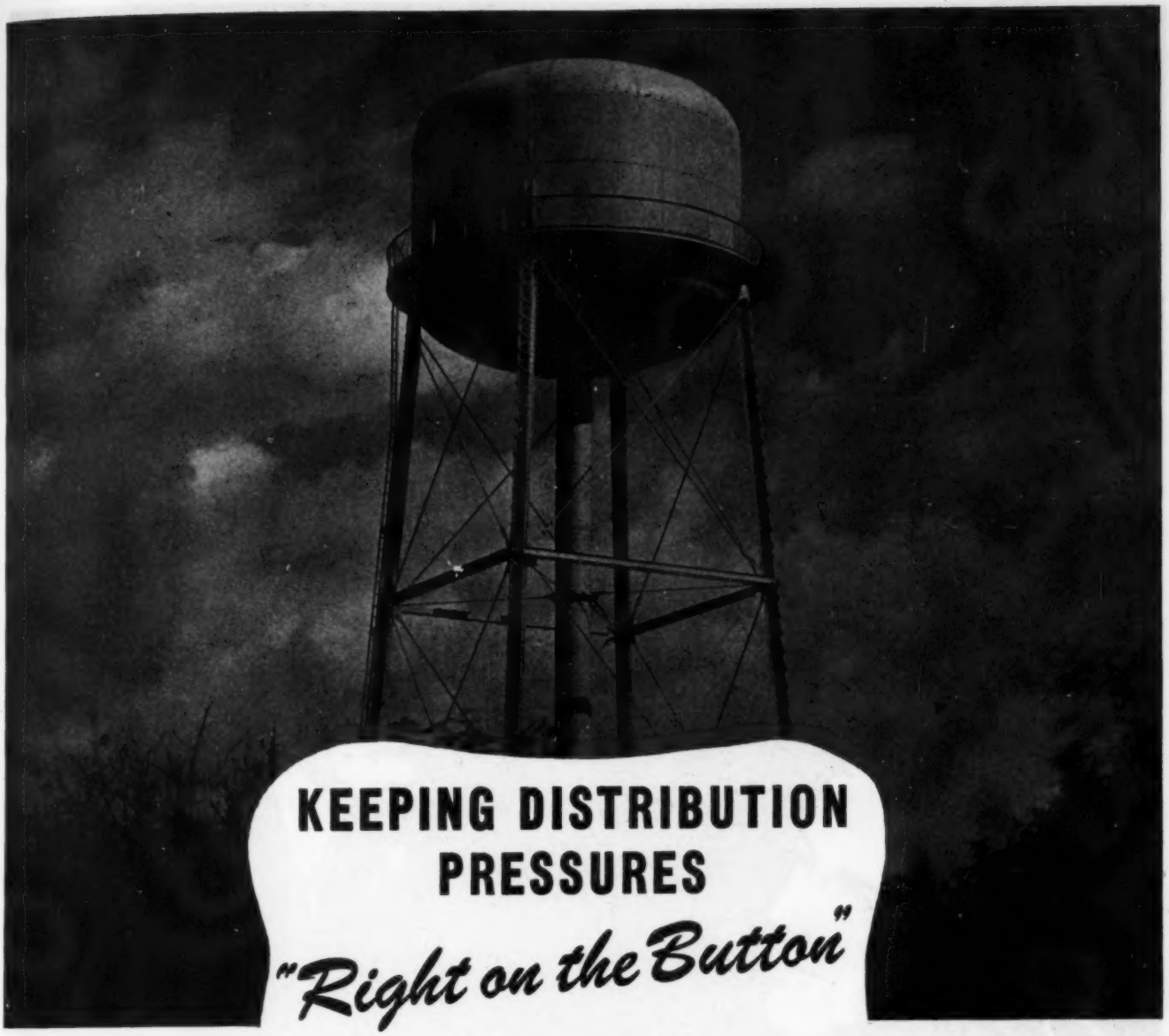
Future-thinking engineers will be interested in this airport drainage story: Engineering integrity demanded a pipe with safe strength to handle heavy loads. Since the port was to continue in use after the war, economy dictated that the system be as durable as possible. Designers solved the problem with Asbestos-Bonded Paved Pipe.

The flexible corrugated metal design of ARMCO Pipe prevents breakage; and band couplers make for strong, tight joints. Longer lengths and fewer joints mean lower installation costs. Cradling is unnecessary. Corrosion is shackled by a full bituminous coating tightly bonded to the base metal. A thick bituminous pavement checks erosion—makes the bottom last as long as the top.

It will pay you well to keep Asbestos-Bonded ARMCO Sewer Pipe in mind for post-war projects even though you may not be able to get it for immediate construction. After the war it again will be available to help solve your toughest sewer problems. Armco Drainage Products Assn., Middletown, O.

★ ★ ARMCO ★ ★

ASBESTOS-BONDED
ARMCO SEWER PIPE



KEEPING DISTRIBUTION PRESSURES "Right on the Button"

. . . with the aid of HORTON ELEVATED TANKS

This 100,000-gal. Horton elevated tank at Temple City, Calif., helps to hold distribution pressures uniform. Throughout this water supply system there are four elevated tanks with a total capacity of 320,000 gals., and seven reservoirs with a 7,816,500 gal. capacity. The area served includes San Marino, part of San Gabriel, Temple City, and El Monte.

Uniformity of distribution pressures is only one of the definite advantages provided by Horton elevated storage tanks. Other advantages include: provision for pumping during off-peak periods; maintenance of an ample reserve of water which is immediately available for fire protection; a general improvement in service and often elevated storage is directly responsible for the lowering of the insurance rating in a municipality.

How elevated storage is helping municipalities meet today's problems can aid those planning post-war water supply systems.

ARMY (E) NAVY

. . . Awarded to our shipyard at Seneca, Ill., and dry dock yards at Eureka, Calif., and Newburgh, N. Y.

CHICAGO BRIDGE & IRON COMPANY

Chicago 4.....2198 McCormick Bldg.
New York 6.....3380-165 Broadway Bldg.
Cleveland 15.....2262 Guildhall Bldg.
Havana .....402 Edificio Abreu
Birmingham 1.....1586 North 50th Street
Tulsa 3.....1646 Hunt Bldg.
Houston 1.....5615 Clinton Drive
Philadelphia 3.....1644-1700 Walnut St.
Washington 5.....330 Bowen Bldg.
San Francisco 5.....1083 Rialto Bldg.

BLUEPRINT NOW....

your postwar PLANS!

"Blueprint Now" is the official slogan of the national *Committee on Water and Sewage Works Development** organized and functioning, state by state, to get postwar plans out of the "talking" stage into blueprint form—detailed plans and specifications—so that construction can start at the drop of a hat, when armistice comes.

The Cast Iron Pipe Research Association gladly contributes additional publicity to the furtherance of this program. It is of prime importance to the community and the nation.

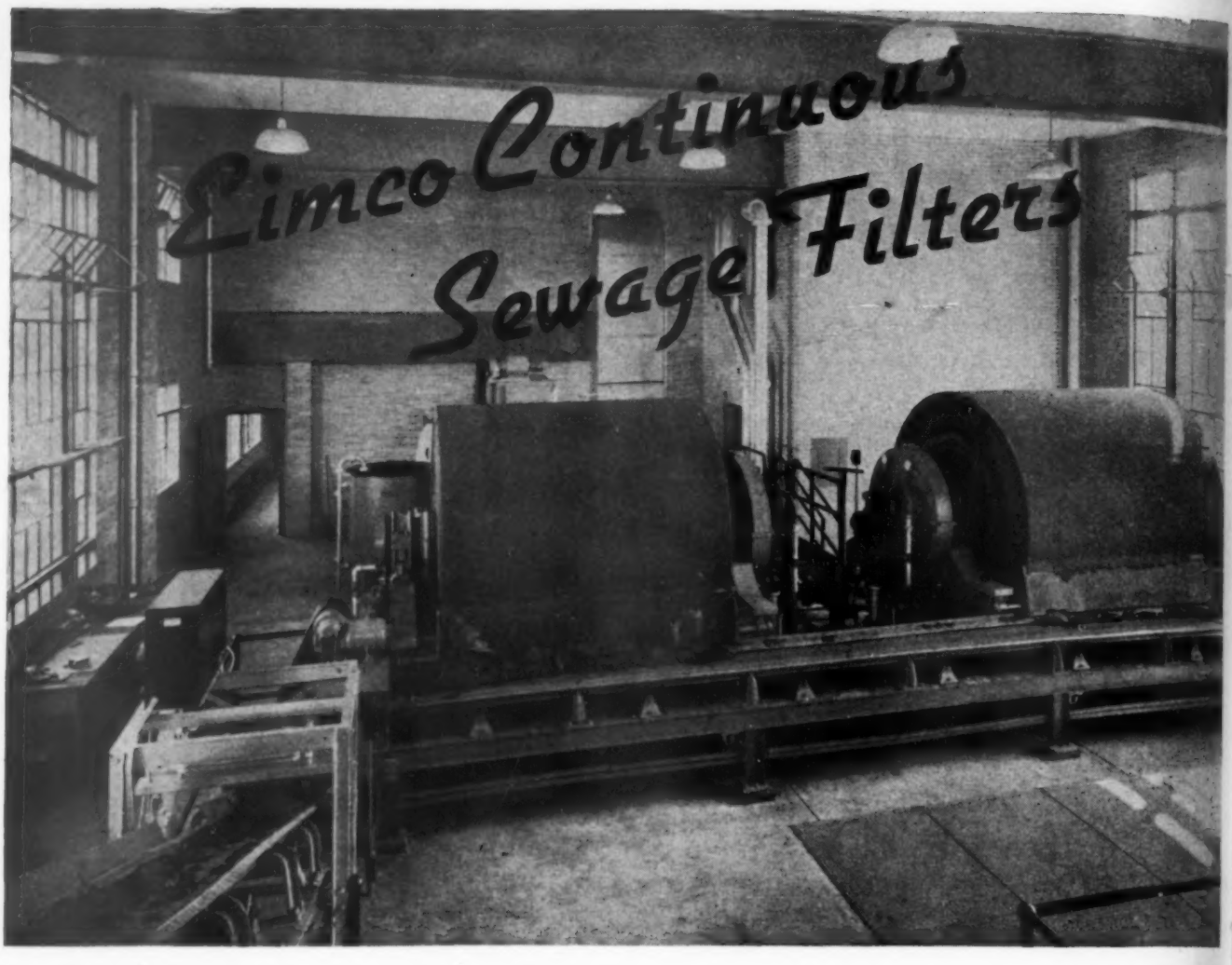
Water supply, gas and sewerage systems have been starving for needed improvements, and getting along on a bare subsistence diet for maintenance, in order to conserve manpower and materials for the war effort.

When war priorities are lifted, every community expects, and is entitled, to have these vital public services restored to full efficiency *without delay.* When returning service men are looking for work, the nation will expect that the vast reservoir of millions of man-hours of employment, represented by this deferred construction, will be ready to be tapped—*without delay.*

The way to prevent delay is to *blueprint now.* Remember that when the "dam" breaks on deferred projects—general building construction as well as underground mains—there may be a temporary shortage of certain materials until plant conversions are effected. However, cast iron pipe will be available, then as now, *without delay.*

CAST IRON PIPE
RESEARCH ASSOCIATION, CHICAGO
CAST IRON
NO. 1 TAX SAVER

* *To communicate with the* Committee on Water and Sewage Works Development *address Suite 2110, 500 Fifth Ave., New York 18, N. Y.*



Eimco Continuous Sewage Filters for dewatering sludge in modern sewage disposal plants are the product of: (1) Careful investigation of the local conditions under which the filter must operate. (2) Design and construction of the filter and all necessary accessories to meet the specific requirements of the particular installation and at the same time combined to occupy minimum floor space and to give maximum efficiency in operation. Eimco Engineers welcome an opportunity to aid in planning post-war sewage treatment plants. Why not call on them for assistance now!

Superior workmanship and heavy duty construction. Complete design and engineering service. Eimco assumes responsibility of complete filter installations. Preliminary estimates and layouts available without obligation.

EIMCO

THE EIMCO CORPORATION, SALT LAKE CITY 8, UTAH
NEW YORK 120 BROADWAY
CHICAGO 111 W. WASHINGTON ST.
SACRAMENTO 1217 7TH ST.
EL PASO MILLS BUILDING

AT LAKE FOREST HOSPITAL
93% removal of 5-day B. O. D.
*76% removal of suspended solids **
YEOMANS "WATER-WHEEL" DISTRIBUTOR

Designed specifically for small sewage treatment plants where unfailing regularity is essential

• Here is dependable, proper purification at low first cost and unusually low operating expense—Yeomans "Water-Wheel" Distributor. Serving isolated small communities and institutions—schools, hospitals and the like—this simple, well designed, sturdily built unit has set an enviable record for steady efficiency.

• Satisfactory operation is sure at all rates of flow, for rotation of the distributing trough takes place only as the water-wheel buckets fill. And the V-notch type of feed prevents the frequent clogging and necessary cleaning common to small reaction-type distributors.

**A typical week's operation at Lake Forest Hospital, Lake Forest, Illinois gave these test figures—93% removal of 5-day B.O.D., and 76% removal of suspended solids. The "Water-Wheel" distributes over a 20-foot filter bed, and treats sewage from an institution of 220 persons — laundry, toilets and operating room wastes.*

A new bulletin, No. 6552, gives full details concerning Yeomans "Water-Wheel" Distributor. Send the coupon.

YEOMANS PUMPS · GIVE YEOMAN SERVICE ·

YEOMANS BROTHERS COMPANY
CHICAGO

• SIMPLE AND ECONOMICAL •

A rotating distributing arm of channel section feeds the sewage to the filter by a series of V-notch openings with spreader plates—so spaced as to make sure of even distribution.

No dosing chambers or siphons are needed, and a "Water-Wheel" Distributor can be used with any kind of primary sedimentation tank.

Present designs can be furnished for filter beds from 5 feet to 25 feet in diameter, and for maximum capacity of 65 gpm. with a head of 2 feet from filter media to liquor level in the sedimentation tank.

Winter enclosure is inexpensive . . . no necessity for a costly high dome. No accessories are needed; and the mechanism can be erected and maintained by any competent handy-man.

SEND COUPON . . . *There's no Obligation*

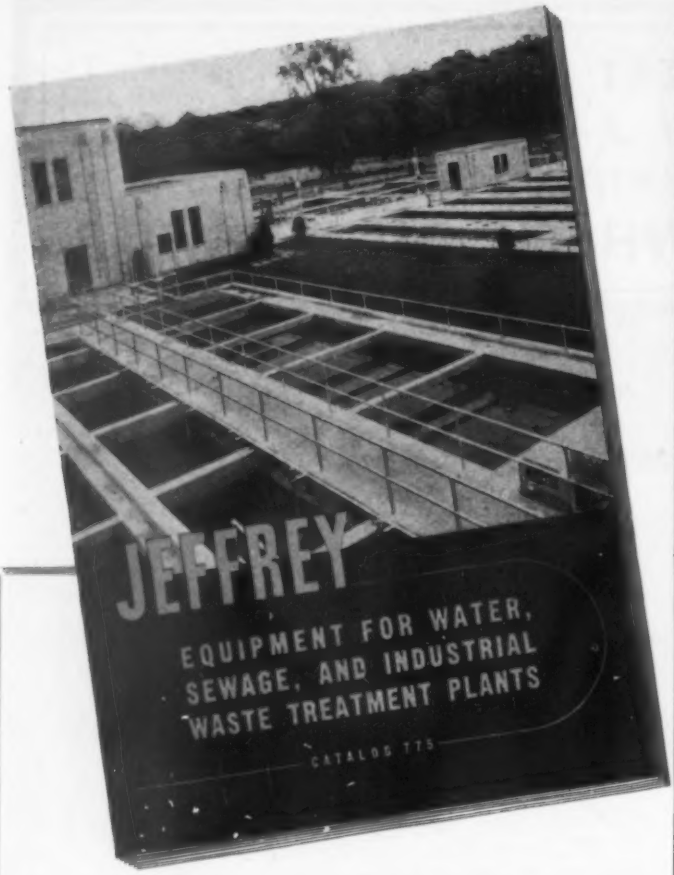
YEOMANS BROTHERS COMPANY
1423 North Dayton Street • Chicago 22, Illinois

Please send Bulletin No. 6552 with full description of Yeomans "Water-Wheel" Distributor.

*Name*_____

*Address*_____

*City*_____ *State*_____



HERE'S A SOLUTION TO YOUR HEALTH PROBLEMS

Hot off the press, this new catalog is packed with useful data to help Engineers in the field of purification . . . current health problems as well as post-war planning.

Jeffrey has had a hand in making ours the healthiest nation . . . will continue to offer specialized service and equipment to guarantee effective solutions to many treatment processes. Send for this new book.

40 pages of engineering data and photos covering:

Bar screens (mechanically cleaned)	Grit washers	Screenings grinders
Chemical feeders (electric vibrating)	Grit collectors	Scum removers
Flectrols (controlled flocculation)	Primary and secondary sludge collectors	And equipment for Biofiltration plants (All patented)
	Sludge elevators	

The Jeffrey Manufacturing Co.

(Established in 1877)

996-99 North Fourth Street, Columbus 16, Ohio

Please send me copy of Catalog No. 775-E.

Name .....

Position .....

Company .....

Address .....

What the silver lining is to the clouds in the sky, the Centriline process is to the water supply pipes under the ground. A protective inner lining of thin, dense cement, applied speedily and economically the Centriline way, will greatly increase and maintain the carrying capacity of your pipelines and extend their longevity. By providing a permanently smooth, non-tuberculating, non-corrosive surface, it insures a high coefficient for life. Recondition now—then look for the silver lining in your city budget, too. Wherever your pipeline is situated, whatever its length, whether steel or cast iron—if its diameter is 30" or more—our men can quickly Centriline it. We welcome your inquiry.

The Centriline process is a rapid and economical method of reconditioning pipelines. It consists of first cleaning the main and then applying, by centrifugal force, a dense cement mortar lining of required thickness, mechanically troweled to a smooth finish.

CENTRILINE CORPORATION

148 CEDAR STREET • NEW YORK 6, N. Y.

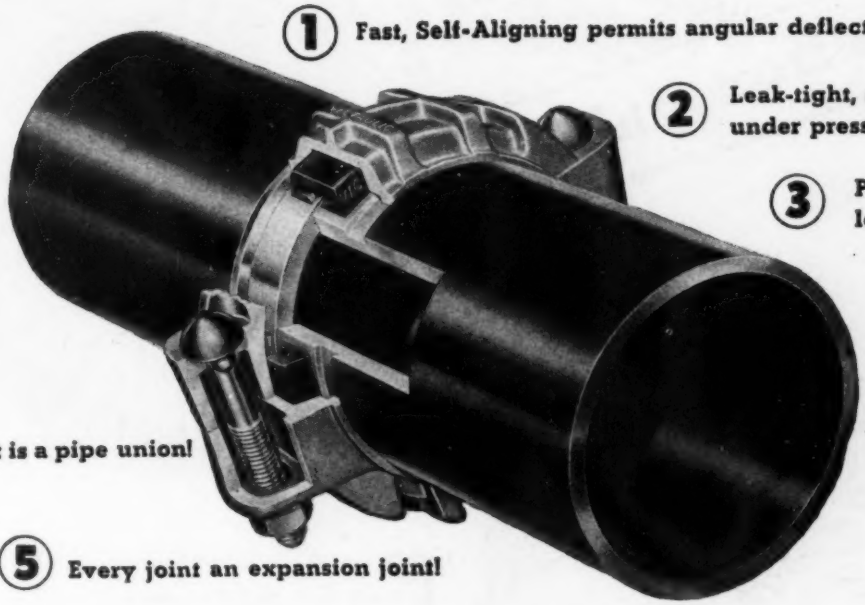
RESTORES AND PROTECTS PIPE-LINE CARRYING CAPACITY

IN JUST THREE HOURS... two men have hooked up 1,000 feet of ready strung 4-inch line in 20-foot joints. *Victaulic is the fastest known method of coupling pipe.* Its flexibility eliminates the need for accurate aligning of pipe... saving money, saving time, saving man-hours. Self-Aligning Victaulic Couplings give you all these added advantages...

(1) Fast, Self-Aligning permits angular deflection!

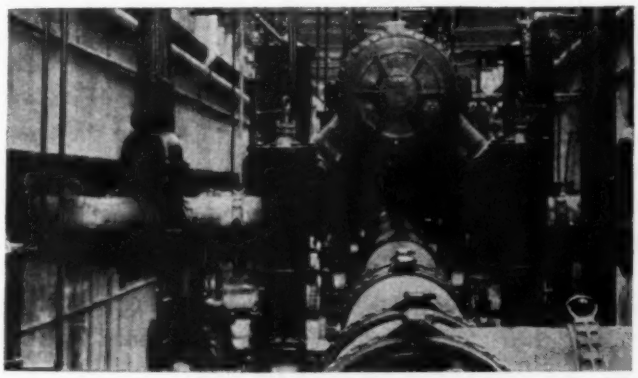
(2) Leak-tight, self-sealing under pressure or vacuum!

(3) Positive mechanical lock of pipe lengths!

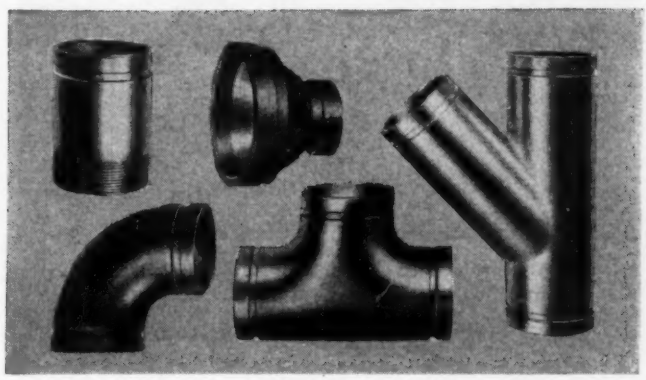


(4) Every joint is a pipe union!

(5) Every joint an expansion joint!



SAVES MONEY IN INSTALLATION AND MAINTENANCE! For 20 years Victaulic Couplings have been specified by Municipal Engineers for power plants, water storage and supply, gas, sewerage, fire protection, emergency line and other pipe installations. Unskilled labor can handle the installation. Only a small wrench is needed. Maintenance is nil.



VICTAULIC FULL-FLOW FITTINGS! A new line of redesigned pipe fittings to eliminate undue frictional losses! Engineered with long easy sweeps to reduce the possibility of clogging to an absolute minimum. A real contribution to greater efficiency in conducting fluids and gases in pipe systems.

BUY MORE WAR BONDS!

MUNICIPAL

VICTAULIC

SELF-ALIGNING PIPE COUPLINGS
AND FULL-FLOW FITTINGS

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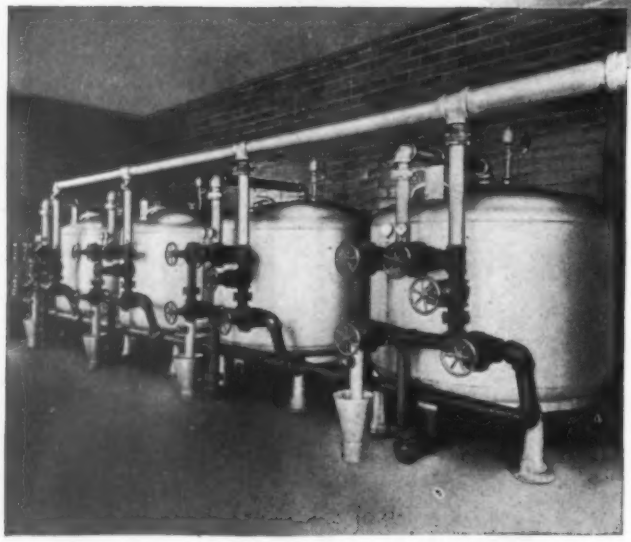
*Firm*_____

*Address*_____

Mail to nearest address: VICTAULIC COMPANY OF AMERICA, 30 Rockefeller Plaza, New York 20, N. Y.; Victaulic Inc., Los Angeles 14, California; Victaulic Co. of Canada, Ltd., Toronto. 2-G

One sure way to remove iron stain



Battery of four Graver Iron Removal Filters installed at a Minnesota municipal plant.

IT'S A NUISANCE, any way you look at it—that rusty red stain that discolors bath tubs, bowls, and sinks. Furthermore, it's a constant source of trouble and expense, for iron in the water causes clogged drains and corroded plumbing.

But—it's a condition that can be easily corrected. Graver Iron Removal Filters will not only remove the iron from a municipal water supply, but even the finest particles of suspended matter will be eliminated. Result—clear, filtered water that will meet the most rigid requirements.

Graver Iron Removal Filters are serving American communities in all parts of the country. They're demonstrating their ability to do a thorough, efficient job at low cost. And they can do the same for you.

Our engineers will gladly discuss your problems with you and submit quotations without obligation.

GRAVER TANK & MFG. CO., INC.

4809-43 Tod Ave., East Chicago, Ind.

NEW YORK CATASAUQUA, PA. CHICAGO TULSA

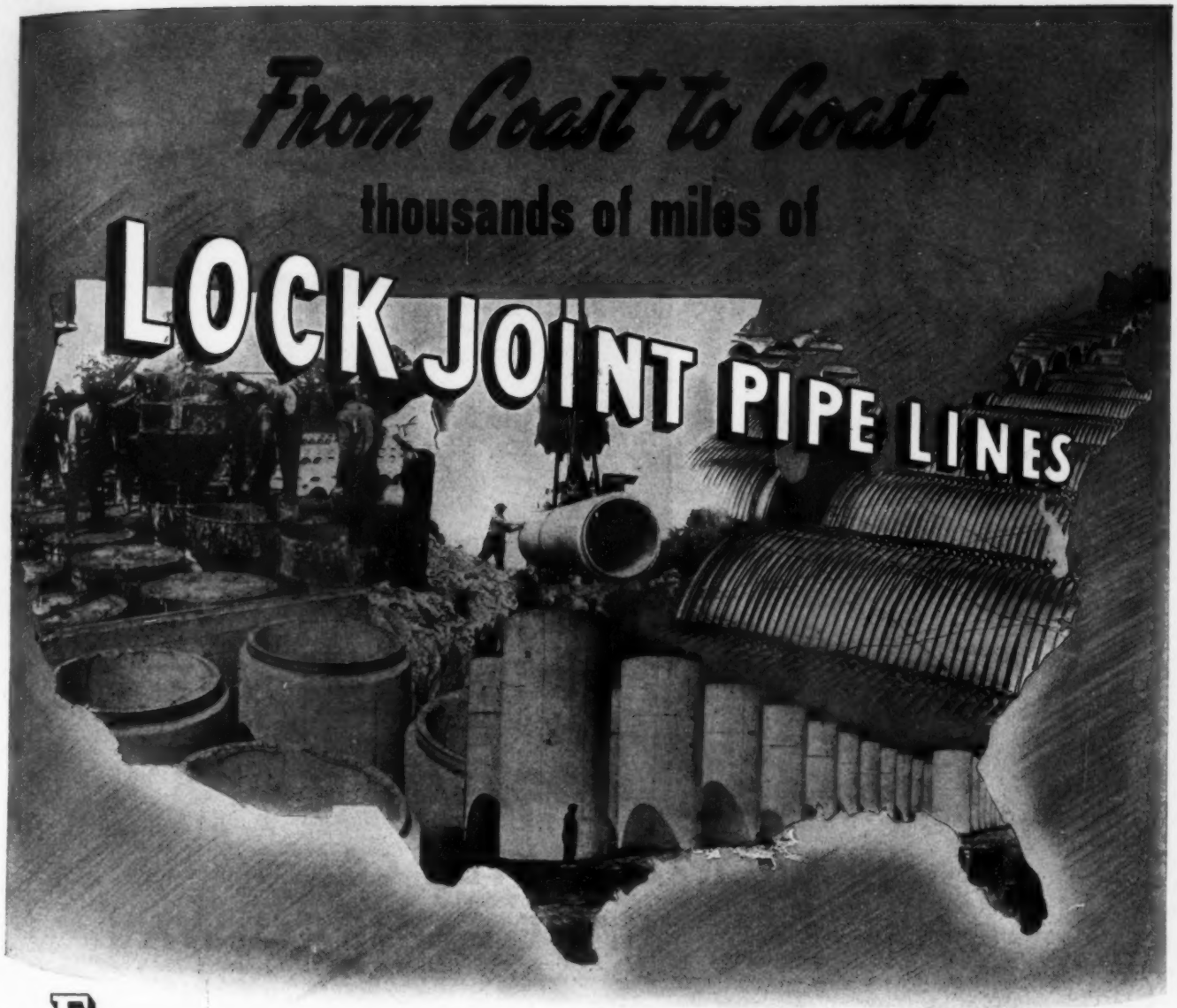
GRAVER

WATER CONDITIONING EQUIPMENT

Graver designs, builds and installs all types of water conditioning equipment including:

Hot Process Water Softeners • Zeolite Water Softeners • Water Filters • Iron Removal Filters • Taste and Odor Removal Filters Oil Removal Filters • Sewage Treatment Equipment

43-47W



From Portland, Maine to Oakland, California, Lock Joint Concrete Pressure Pipelines have created new high standards for water supply mains for the past 3 decades.

Leading water works engineers are definitely agreed that these highly efficient pipelines can absolutely be depended upon for strength, easy installation, adaptability, safety, high carrying capacity, water-tightness, long life and economical service.

In peacetime Lock Joint Pipelines are built with an eye to long-range programs and are recognized as the best method of constructing large diameter, high pressure water supply mains. In wartime, they offer a 25% to 75% saving of critical materials on 100% critical jobs.

The history of our many installations is the best proof of the lasting qualities built into every mile of Lock Joint Reinforced Concrete Pressure Pipe.

◆ ◆ ◆ ◆

Whether your project is large or small, for the present or the future, your 'phone call, telegram, cable or letter to any of our offices will bring a prompt reply.

LOCK JOINT PIPE COMPANY

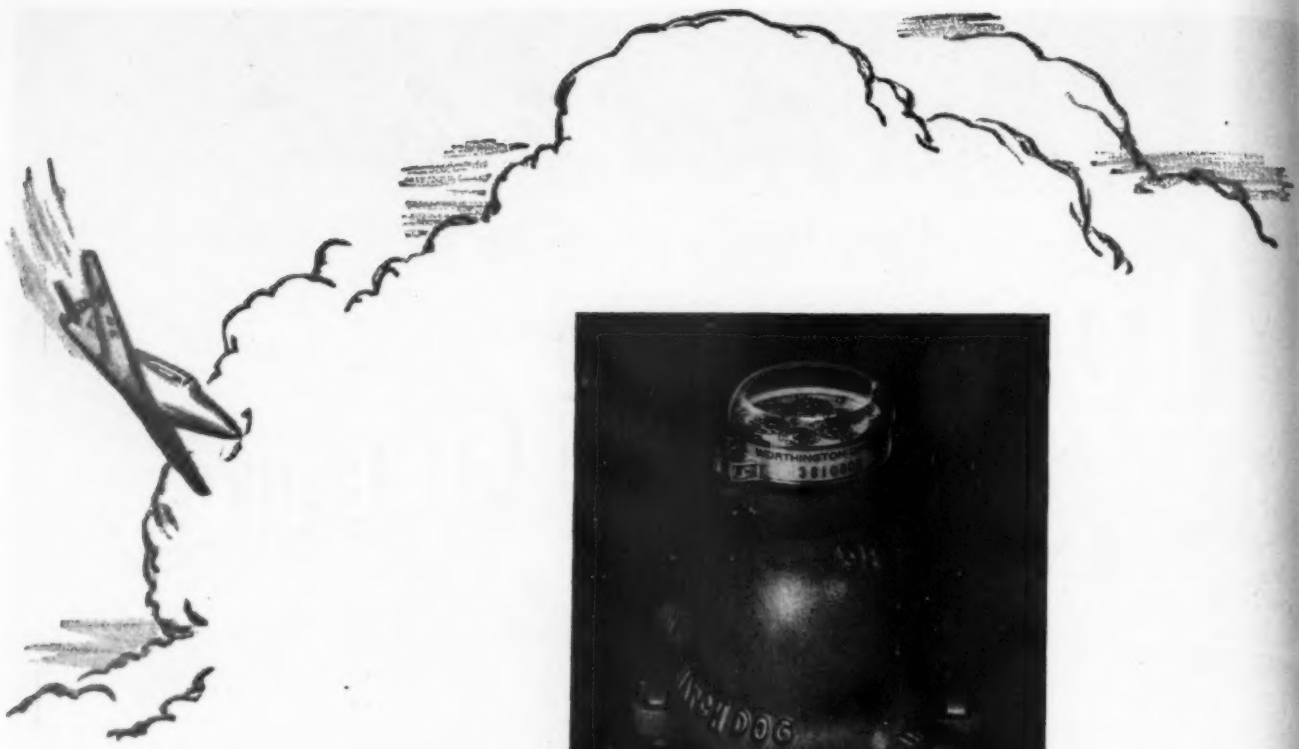
Established 1905

AMPERE, NEW JERSEY

Denver, Colo. · Chicago, Ill. · Kenilworth, N. J. · Kansas City, Mo. · Rock Island, Ill. White Plains, N. Y. · Valley Park, Mo. · Cleveland, Ohio · Hartford, Conn. · Navarre, Ohio

SCOPE OF SERVICES *Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply Mains as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous lines.*

LOCK JOINT
Reinforced Concrete
PRESSURE PIPE



BRONZE METER CASES HAVE GONE TO WAR

Yes! We continue to manufacture Water Meters, with Army, Navy and Maritime Commission taking preference.

Of course, we are operating under WPB Limitation Order L-154 to conserve copper, and must use substitutions for certain critical materials. That is why Worthington-Gamon Household Meters now come to you with iron casings and glass register boxes.

However the Limitation Order does not affect the interior parts. Therefore the materials in the gear train and measuring chamber remain unchanged.

Accuracy is assured by maintaining the same rigid manufacturing standards as in the past . . . and all parts are interchangeable with your other Worthington-Gamon Meters.

WATCH DOG

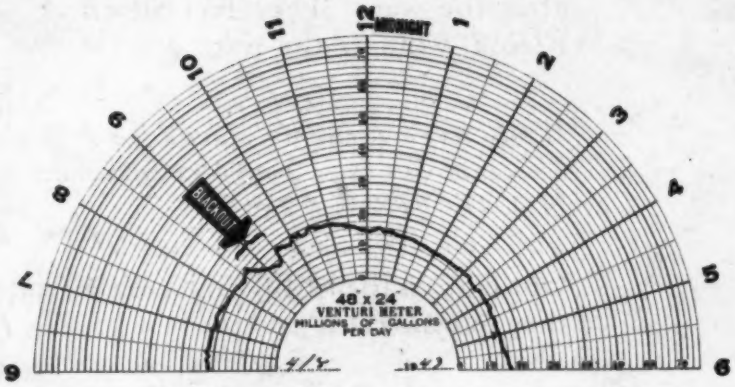
WATER METERS

WORTHINGTON-GAMON METER COMPANY
282-296 SOUTH STREET NEWARK, NEW JERSEY

WG3-3

WORTHINGTON-GAMON

THE MASTER WORKS THROUGH A BLACKOUT



The sirens started shrieking in Portland, Maine, at 8:45 in the evening. Business was interrupted, industry slowed up, folks at home sat it out in their easy chairs.

The 48-inch Venturi Master Meter of the Portland Water District, *through which all water to its distribution mains is measured,* however, kept faithfully at work, indelibly writing out the effect of the blackout on the water consumption. The flow rate dropped rapidly from 20 to 16 million gallons per 24 hours, then more slowly to 15 million, and finally rose immediately to 19 million when the "All Clear" came in at 9:30, as shown by the Venturi Chart.

EVERYWHERE VENTURI MASTER METERS ARE DAILY REVEALING IMPORTANT CHANGES IN WATER SUPPLY AND CONSUMPTION.

Make *your* main line metering problems *ours.* Builders-Providence, Inc., (Division of Builders Iron Foundry), 9 Codding Street, Providence 1, R. I.

Sincerely Yours,

BUILDERS
RECORDING-INDICATING-CONTROLLING
Instruments

BUILDERS-PROVIDENCE

What is all this talk about POST WAR PLANNING *and why is it so necessary?*

★ ★ ★ ★ ★

At first glance many people are apt to question the *PATRIOTISM* behind the idea of making plans *NOW* for work to be carried out after the war. They feel all efforts should be directed toward *FIRST* winning the war.

★ ★ ★ ★ ★

Well, there certainly should be NO slackening of effort in that direction but it is also very necessary to "win the peace" on the HOME FRONT.

★ ★ ★ ★ ★

Our boys on the battle fronts *MUST* be assured of two things when they return: *JOBS* and the best possible *LIVING CONDITIONS.*

★ ★ ★ ★ ★

Jobs MUST be created to cushion the shock of conversion from a state of war to a peace time economy.

★ ★ ★ ★ ★

And surely *nothing* is more important to general living conditions than "an adequate, safe and satisfactory water supply."

★ ★ ★ ★ ★

At the same time we can guard against a return to the days of "boondoggling" government financed projects. YOU can control your own projects; do WHAT you need to, WHEN you need to, and with the MATERIALS you think BEST.

★ ★ ★ ★ ★

This, then, represents the *HIGHEST* form of patriotism. It is more than a *PRIVILEGE*, it is a *DUTY* we owe to our country and our community.

★ ★ ★ ★ ★

So let's start now on DEFINITE plans. It's not too EARLY; it may be LATE!

★ ★ ★ ★ ★

Let's prove American *INITIATIVE* is still on the job! Let's get those projects designed! Let's arrange the financing! Let's *BLUE PRINT NOW!*

★ ★ ★ ★ ★

RENSSELAER VALVE COMPANY
TROY, N. Y.

Put it up to WILSON

What are your needs now or in the immediate future as to:

1 HYPO-CHLORINATION (Pulsafeeder)

For accurate* feeding of HYPO-CHLORITE; Activated, Black and Filter ALUM; Soda Ash; Ferrous, Ferric, Aluminum SULPHATE; Calgon; LIME SURRY; Sodium Aluminate; CAUSTIC; Ferric Chloride; Sulphuric Acid, Aqua Ammonia, etc.

2 CHEMICAL PROPORTIONING PUMPS

For accurate* feeding of all Acids and Alkalies.

Or (3) Liquid Filling Machines for non-combustible liquid materials; automatic or manual operation, standard or special construction.

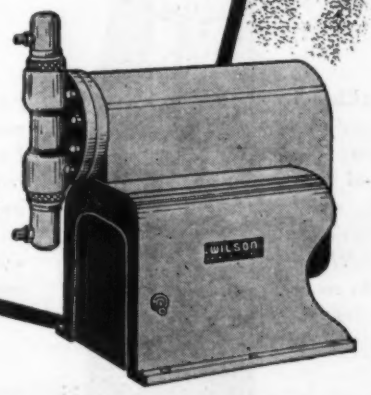
●

Simplification of Wilson equipment assures accurate,* continuous, trouble-free operation. Prompt shipment on AA-4 or better Priority.

Outstanding Features (1 and 2) Positive Displacement. No contact between chemicals being pumped and operating parts. No packing glands. No diaphragm breakage.

*By accurate we mean better than ⅛ of 1%.

Ad K-3



YOUR INQUIRY
for definite equipment, for information, or for literature... will receive prompt, intelligent attention.

WILSON CHEMICAL FEEDERS, INC.

Two complete plants—MANUFACTURING *Chemical Feeders for Water Conditioning and Processing Industries... and by recent acquisition, Manufacturers of CLEVON and BUFFALO Automatic* LIQUID FILLING MACHINES.

Est. 1923...with experience in allied lines since 1914

203 CLINTON STREET (P. O. Box 998) BUFFALO 4, N. Y.

NEW!

The *Bob White*

ELECTRONIC

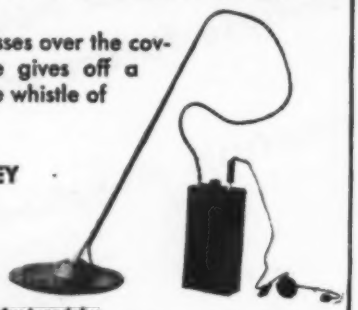
BOX LOCATOR

LOCATES ALL METAL UTILITY SERVICE BOXES AS FAST AS YOU CAN WALK!

When the loop aerial passes over the covered box, the earphone gives off a signal that sounds like the whistle of of a BOB WHITE.

SAVES TIME and MONEY
EASY TO OPERATE
SIMPLE TO HANDLE

Write for details



Manufactured by

FERGUSON & PASCOE
11 HILL STREET, NEWARK 2, N. J.

THE ACCELO-FILTER

SAVE PIPING AND PUMPING COSTS OBTAIN HIGHER EFFICIENCY WITH DIRECT RECIRCULATION IN THE

ACCELO-FILTER

Activators
Clarifiers
Digesters

INFILCO

Distributors
Griductors
Samplers

WRITE FOR BULLETIN 2415

INFILCO INCORPORATED

FORMERLY INTERNATIONAL FILTER CO
325 W. 25th PLACE, CHICAGO, ILL.

SAFETY and ACCURACY

with SterElatorS by Everson

with SterElatorS by Everson

Everson SterElatorS are all equipped with the Rota-Meter Visible Gas Feed Indicator which actual tests have proved to be as high as 99.5% accurate in the measurement of continuous gas flow.

Everson SterElatorS mean greater safety. For in case of water failure or gas line leakage, the vacuum regulator and shutoff valve automatically stops the gas flow.

EVERSON MANUFACTURING CO.
233 W. Huron St. CHICAGO, U. S. A.

QUICK - ECONOMICAL - EFFECTIVE

Wartime emergencies may bring you face to face with a serious repair problem—without notice or warning. If this occurs, a supply of these Doublex Simplex Split Sleeves may be "worth their weight in gold." They permit quick, economical, effective repair of broken pipe. You should have in stock several of each size that you might need. They have been on the market for 14 years and many thousands of them are now in use.

AMERICAN CAST IRON PIPE COMPANY
BIRMINGHAM 2, ALABAMA

Minneapolis New York City Cleveland Los Angeles
Dallas Houston El Paso Pittsburgh Kansas City Chicago
San Francisco

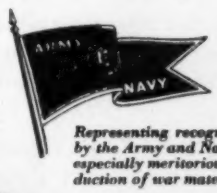
Now Badgers Are Proving Their **Ruggedness**

Sound engineering, durable construction, lasting dependability, designed and built into Badger water meters for 38 years, are proving their value today. These qualities are reflected in longer life, sustained accuracy, less need for repair and replacement and lower maintenance cost.

For 38 years Badger has stood for the finest materials, craftsmanship and presicion manufacture. Communities that invested in Badgers have proved the wisdom of their selection by the trouble-free service their Badger water meters have given. The Badger organization is prepared to help you with conservation of water meters — now a patriotic duty. Whether your problem is one of maintenance, repair or replacement, feel free to call on us.

BADGER METER MFG. CO.
MILWAUKEE, WISCONSIN

BRANCH OFFICES: New York City • Waco, Texas • Tampa, Fla. • Chicago, Ill. • Kansas City, Mo. • Savannah, Ga. • Marshalltown, Iowa • Seattle, Wash. • Los Angeles, Calif. • Philadelphia, Pa.



Representing recognition by the Army and Navy of especially meritorious production of war materials.

Calgon does 4 things—and does them well

1

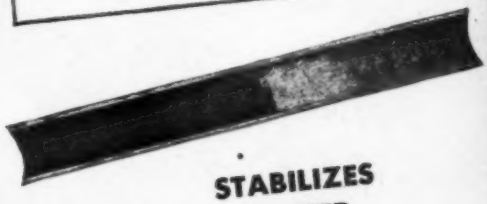
CONTROLS CORROSION
from soft water

2

ELIMINATES "RED WATER"
either from corrosion or from dissolved iron in well water

3

PREVENTS SCALE
from hard high-bicarbonate water



4

STABILIZES WATER
after lime-soda softening and prevents scale deposits

MANY water works men find it difficult to believe that one product can be highly effective in solving all four of the problems shown above. This is quite natural because, in the past, solving the scale problem often introduced corrosion —and safety from corrosion could usually be obtained only by forming scale.

Calgon works differently and it may be necessary for you to get a fresh view point before you can see how Calgon can solve each of these problems. Here's how it works:

In soft corrosive water Calgon maintains a thin protective film over pipe metal and metal oxides throughout the system and reduces the attack of oxygen so effectively that corrosion ceases to be a serious problem and "red water" is eliminated.

In "Red water" resulting from the precipitation of dissolved iron from well water, Calgon has the property of inhibiting precipitation. Because there is no precipitation of dissolved iron, "Red water" doesn't show up at the consumer's tap.

In hard, high-bicarbonate water Calgon prevents precipitation of calcium carbonate scale to the extremities of the line. It eliminates scale troubles in pipe lines, valves, meters and hot water heaters.

In lime-soda softened water Calgon, added after the softening process, stabilizes the water and prevents precipitation of calcium carbonate in all parts of the system.

For any of these treatments, the amount of Calgon* needed is extremely small—only 1 to 5 ppm., depending on individual plant conditions. Write for full information.

Calgon is the registered trade-mark of Calgon, Inc., for its glassy sodium phosphate products.

HAGAN
HALL
BUROMIN
CALGON

calgon, inc.

A SUBSIDIARY OF HAGAN CORPORATION

HAGAN BUILDING
PITTSBURGH, PA.

QUICK FACTS ON TRANSITE SEWER PIPE

FAST INSTALLATION . . .

Transite's long lengths reduce the number of joints needed in the line . . . its light weight permits easier, faster, more economical handling.

LESS INFILTRATION . . .

Fewer, tighter joints minimize leakage, cutting down on the load at the disposal plant.

HIGH DELIVERY CAPACITY . . .

This advantage of Transite Pipe frequently permits smaller pipe or flatter grades, resulting in shallower trenches.

AVAILABLE BOTH FOR FORCE MAINS AND GRAVITY LINES

Complete information is given in brochure TR-21A. And for details on lower-cost water transportation, send for Transite Water Pipe Brochure TR-11A. Johns-Manville, 22 East 40th Street, New York 16, N. Y.

ENGINEERING DATA

GRAVITY TYPE

Sizes: Class 1— 4" to 36"
Class 2—10" to 36"
Class 3—10" to 36"
Class 4—18" to 36"

Crushing Strengths:
A.S.T.M. 3-edge bearing test method

Pipe size inches	Lb. per linear ft.			
	Class 1	Class 2	Class 3	Class 4
4	4125	....	....	....
5	3350	....	....	....
6	2880	....	....	....
8	3100	....	....	....
10	2580	....	....	....
12	2370	3690	....	....
14	2200	3850	4920	....
16	2120	3920	5100	....
18	2030	4050	5150	....
20	2290	4140	5280	....
24	2340	4280	5360	....
30	2980	4550	5850	6340
36	3500	5000	7050	7100
		5400	8180	8600
			9700	10450
				12300

Friction Coefficient (Kutter's); n=.010

PRESSURE TYPE

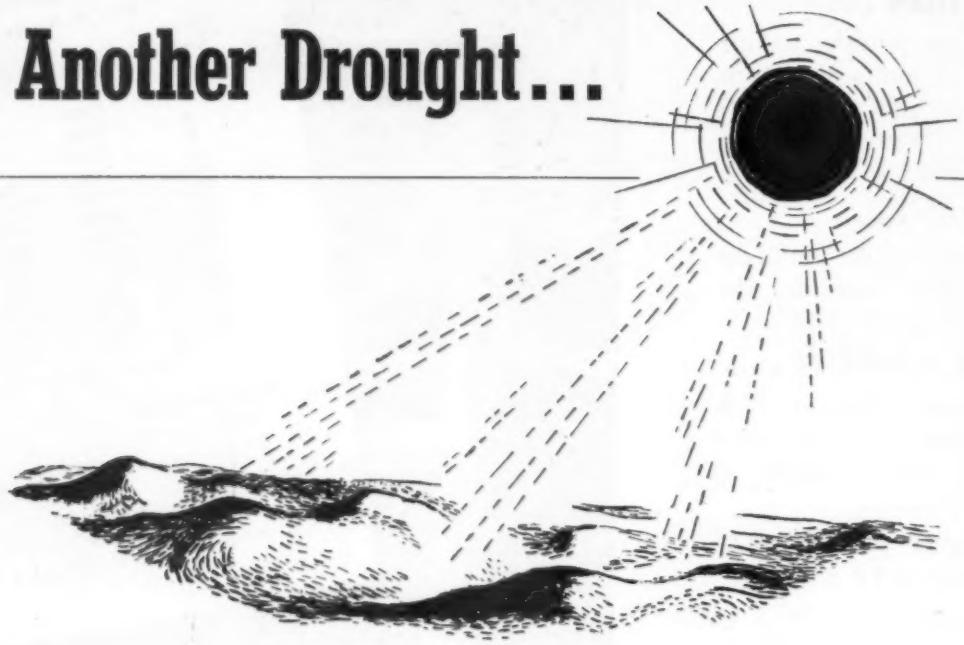
Sizes: 3" to 36"
Pressure classes: Class 50— 50 lbs. per sq. in.
Class 100—100 lbs. per sq. in.
Class 150—150 lbs. per sq. in.
Class 200—200 lbs. per sq. in.
Friction Coefficient (Williams & Hazen): C=140

Johns-Manville

TRANSITE SEWER PIPE

An Asbestos Product

Plain Facts Regarding the Possibility of Another Drought...



A CAREFUL study of the precipitation cycle for the United States east of the Rockies shows that 7.4 years is the average period from maximum rainfall to drought. We are at present on the decline toward exceedingly dry weather.

What will this mean to your water supply and sanitation problems? Have you the facilities to handle conditions of decreased water with possible increases in population and industrial demands? Do you have an accurate indication of your present water treatment capacity?

Before water is scarce we would like to see hundreds of municipal engineers inaugurate accurate water surveys — to find where leaks are if any; to check pumps, meters, and trunk main lines so that every community will be assured of an adequate continuous supply of water.

Simplex Valve & Meter Company draws this basic and vital information to your attention, not alone because we manufacture pitot equipment for making accurate water surveys, but because it is our firm belief that every possible effort should be made now, to avert a disaster such as the dust bowl which we remember all too vividly in the recent past. . . . Simplex Valve & Meter Company will be glad to discuss this matter in further detail with you.

SIMPLEX VALVE & METER COMPANY
6743 UPLAND STREET, PHILADELPHIA 42, PA.

EXPERIENCE ...picks Sodium Silicate WATER TREATMENT

FOR

★ BETTER QUALITY OF WATER
★ HIGHER FILTRATION RATE
★ LOWER COSTS

ALKALI

Use.... STANDARD SILICATE

for ◆ UNIFORMITY
◆ DEPENDABILITY
◆ IMPROVED FLOCCULATION

Write for information on the best way to use the Silicate Treatment in your plant. Use the coupon.

Standard Silicate Division, Diamond Alkali Company,
Oliver Building, Pittsburgh, Pa.

Our water supply has the following characteristics:

. . . . . Million Gallons per Day Average Turbidity . . . . . .

Present Dosage . . gr./gal. Coagulant . . . . . .

We would be glad to receive further information on the use of Standard Silicate.

Name . . . . . *Title* . . . . . .

Water Works . . . . . *City* . . . . *State* . . . . . .

DIAMOND ALKALI COMPANY • Standard Silicate Division

Plants at CINCINNATI . JERSEY CITY
LOCKPORT, N. Y. . MARSEILLES, ILL.
DALLAS, TEXAS

General Offices • PITTSBURGH, PA.

%PROPORTIONEERS, INC.%

Chemical Feeder Headquarters

WE'VE WORKED

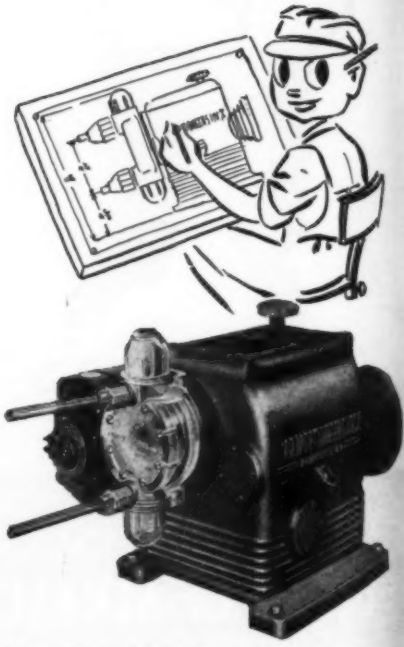
Thousands of boys in America's armed forces in remote and isolated places depend for pure drinking water on %Proportioneers% Pur-O-Pumpers, our portable water purification units. We at %Proportioneers, Inc.% are proud to have had a direct part in helping the war effort by supplying equipment to protect the health of our fighting men.

WE'VE DELIVERED

Now we can again make immediate deliveries from stock of the popular "Little Red Pump", our Heavy Duty Midget Chlor-O-Feeder. To fill wartime needs, we have increased our production and can now make deliveries on a pre-Pearl Harbor basis. Complete manufacturing facilities "under one roof" enable us to assure high quality and prompt deliveries.

WE'VE PLANNED

For the past ten years %Proportioneers, Inc.% has been intimately associated with waterworks engineers and operators. More than a thousand of these men have told us what they want in a chemical feeding unit. Many of their ideas are embodied in the design of the new %Proportioneers% Heavy Duty Chem-O-Feeder, shown at right. Here are two of its principal features: Chemical feeding rate may be selected and changed at will, while unit is operating, by simply turning feed selection knob. - - - feeds chemical continuously, thus avoiding "shot" feeding and unevenly distributed solution.



Bulletin SAN-2 on request

%PROPORTIONEERS, INC.%

9N Codding St., Providence, R. I.

WATER WORKS & SEWERAGE

PUBLICATION OFFICE
330 South Wells Street, Chicago, Ill.
E. S. Gillette, Publisher

EDITORIAL OFFICE
155 East 44th Street, New York N Y
L H Enslow, Editor

COMING!

Your Sympathy, Please!

As the first item in this column we pray your sympathy. The reason is that latest W.P.B. order to cut paper use an additional 15%. In anticipation of what this is to mean to our reading pages in 1944, we are attempting to make some saving in November and December. This is being done to ease the shock of the 15% reduction in January and February for which we already have material scheduled and promised and will need the pages saved.

To make such carry-over saving possible, three reports of meetings intended for this issue and December will have to lay over for December and January. As it is, the lay-over of two reports from October makes this issue embrassingly top-heavy in meetings reports. In addition, three articles intended for this issue are being held another month.

With the additional paper cut it is apparent that in 1944 we shall be forced to sharply curtail meetings reports, unless we hear a preference voiced by readers for continuation of such reports at the expense of fewer articles. Your sympathy please, and your advice concerning meetings reports vs. articles.

This is your magazine and we want your ideas in making it fit YOUR needs.—The Editors.

Depreciation

Is a never ceasing topic of interest in utility accounting, and this is the subject of a thorough discussion in respect to depreciation accounting in water works practice. Involved in the study to be reported is a nation-wide survey of methods and practices as now applied by representative water utilities, with a discussion of the good and the bad—as it exists in present day practice—and suggested remedies looking toward uniformity in depreciation accounting in the water supply field. The author is—

N. T. VEATCH, Jr., Consulting Engineer.
Black & Veatch, Engrs., Kansas City, Mo.

The Distribution System in Water Supply Economics

Is nothing short of a reference work on the economics of the distribution system and good and bad practices in its design, operation and maintenance. One highly important analysis and discussion covers the relationship of elevated storage costs to expenditures for feeder mains of larger size and reserve pump capacity. This paper provides the key needed to answer the question—"When is elevated storage economically justified and in what volume for various sized systems?" Knowing the author is for the reader to anticipate the value of this article by—

LOUIS R. HOWSON,
Consulting Engineer, Chicago.

"Some Notes on the Sewerage System of Little Rock"

Is the story which tells of experience in financing the operation and maintenance of the sewerage system of Little Rock, Ark., and relates problems of operation and maintenance in which certain practices have been developed and others are being planned. The contributor of this interesting story is—

T. W. CLAPHAM, Manager,
Little Rock, Ark., Sewer System.

"Standards for Water Service"

Is the story of methods, developed in Richmond, Va., and the establishment of certain "standards" for water service which has involved careful forethought, study and trial prior to adoption as "official standards" by the Common Council. Involved are "Pressure Standards"; "Permissible Sizes of Service Lines and Meters"; "Basis for Installation Charges for Service Lines and Meters." These last two "standards" will be of especial interest to every water utility manager. This meaty contribution comes from a name already well known for innovations and economy measures—

MARSDEN SMITH, Chief Engineer,
Dep't of Public Utilities, Richmond, Va.

"What to Tell the Complaining Customer"

If you are sure you know all then you needn't read this article. If not, there's something worth while for you in the reasoning of—

WM. T. BAILEY,
Supt. of Water, Kansas City, Mo.

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Baton Rouge, La.

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H. P. Gillette, Pres.; E. S. Gillette, Vice Pres. and Publisher; L. H. Enslow, Vice Pres. and Editor; J. C. Black, Mgn. Editor; George E. Symons, Associate Editor; Editorial Associates—J. R. Baylis, A. M. Rawn, H. A. Faber; H. J. Conway, Adv. Editor; B. I. Campbell, Make-Up Editor. *Chicago Office*, L. H. Lingnor, Rep., 330 S. Wells Street; *Cleveland Office*, Lee B. McMahon, Mgr., Leader Bldg.; *New York Office*, J. M. Angell, Jr., Mgr., 155 East 44th Street; *Los Angeles Office*, Don Harway, Rep., 816 W. Fifth Street.

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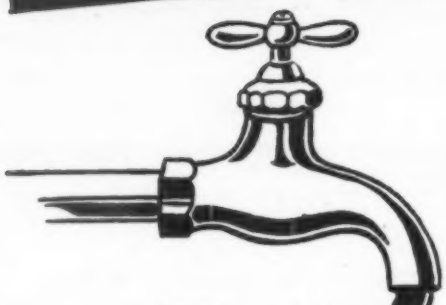
"We do not test meters where consumers keep within minimum rates"

Why not?



Here is a leak of ⅛th gallon per minute — not at all unusual; in fact, many are larger. A leak of this size will run away 180 gallons a day or 16,200 gallons a quarter — an amount sufficiently above the average minimum to make meter testing and repairing pay.

Figure it out for yourself

	TYPICAL WATER WORKS	YOUR WATER WORKS
Waste per quarter at ⅛ gallon per minute..	16,200 gal.	
If repaired meter registers 80% of this.....	13,000 "	
Deduct minimum allowance	7,500 "	
Amount registered above minimum.....	5,500 gal.	
Price for 1,000 gallons.....	x.24	
Revenue above minimum for quarter.....	$ 1.32	

Properly repaired water meters should register 90% at ¼ gallon per minute. Even though some of these may not do as well as 80% at ⅛ gallon per minute it is fair to assume that the increased accuracy above this rate will more than compensate for the difference. The customer billed for an extra $1.32 per quarter would probably repair the leak. But here again the Water Department is ahead of the game, because it has saved the pumpage of water for which it had not previously been paid.

Ask your Trident representative for the benefit of his experience in the proper methods of repairing and testing meters.

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WATER WORKS & SEWERAGE

VOL. 90, No. 11 — *A Gillette Publication* — NOVEMBER, 1943

SEWAGE WORKS FEDERATION THROWS OFF SWADDLING CLOTHES

Membership Gains and Financial Status Permits Establishment of Full-Time Secretarial and Editorial Offices on Third Birthday

Presidents

Geo. J. Schroepfer
Chief Engineer
Minn.-St. Paul
Sewerage Comm.
St. Paul, Minn.
(Retiring)

A. M. Rawn
Engr.-Manager
Los Angeles County
Sanitation Distrs.
Los Angeles, Calif.
(Incoming)

TO HAVE attended the Chicago Conference of the three-year-old Sewage Works Federation on October 21-22-23 was to be impressed with the healthy progress made by this young national organization, which was born in Chicago and returned there just three years later to hold what is generally considered its best annual meeting from all points of view.

To begin with, the attendance was the highest recorded for the four meetings. With a paid registration of 614 the attendance is estimated at 700 or better. The more impressive does this new record become when considering the times, travel difficulties and discouragement of would-be attendants in finding hotels sold out many months in advance of the conference dates. The technical program was throughout interesting, the exhibits attractive, the entertainment tops, but the hotel situation tough—plenty tough. How tough? Well, many with reservation cards dated several weeks, to months, in advance will tell the story of standing in line for the better part of the day, or deep into the night, before getting room accommodations. And, here's something worth knowing: the hotel management has no legal or other method of forcing an occupant to release a room for someone holding a reservation, regardless of the fact that the existing occupant may have been informed that the room could not be occupied beyond a given date. To many of us this was "news"—and, very sad news to some members who had brought along their wives to spend the day and half the night in watchful waiting during repeated desk promises of "It won't be much longer before we can take care of you."

Board of Control Votes Full-Time Secretary—Editor

The biggest news of the conference was the announcement by President Schroepfer that the Federation Board of Control had met the evening before the conference, and amongst other things had, on the strength of the financial status of the Federation, voted to establish a full-time secretarial and editorial office—meaning that henceforth Secretary Wisely will devote his full time to the Federation, becoming executive secretary, editor and business manager of the *Sewage Works Journal*. Headquarters' offices will be established in Urbana, Ill., at least for the present—and until a removal to some other location can be shown to possess advantages. Dr. F. W. Wohlman, who retires as editor of the *Journal* after serving in this capacity since its beginning and for the most meager compensation, will henceforth serve as consulting editor.

Distinguished Guests

Edward J. Kelly
The Mayor
of
Chicago

Maury Maverick
Director
Govt. Div. WPB
Washington

(And both were easy to listen to.)

Vice-President

A. E. Berry
Chief Engineer
Ontario Dept. Hlth.
Toronto, Ont.

Secy. and Editor

H. W. Wisely
Secy. and Editor
Sewage Wks. Fed.
Urbana, Ill.

(Mr. Wisely is giving up his position as manager of the Champaign-Urbana Sanitary District to become full-time Executive Secretary and Editor of the Federation.)

President Schroepfer Reports Further

On the "State of the Federation" President Schroepfer reported to members on the most successful year in the history of the Federation with a net gain of better than 200 members for the year, and a financial gain worthy of note, and such as to put the Federation over the "hurdles" and out into the open stretches. He reported that the Federation now has 16 functioning committees. A new membership committee is to drive for new members. To the chairman of the membership

committee in the member association showing the greatest gain in members during the year between Federation annual meetings the reward is to be a $100 War Bond. To the chairman of the membership committee in that member association showing the highest *per cent* growth in members another $100 War Bond is to be the prize. This means that the smaller of the associations as well as the larger will have a chance at one or the other of the special prizes, donated by an anonymous donor.

Rawn, New President; Berry, Vice-President

The directors elected the following officers for the ensuing year.

President
A. M. Rawn,
Los Angeles
Vice-President
A. E. Berry,
Toronto
Treasurer
W. W. DeBerard,
Chicago

The two new directors-at-large are Chas. A. Emerson, consulting engineer, N. Y. City, and Linn H. Enslow, editor, WATER WORKS AND SEWERAGE.

Pittsburgh, 1944 Conference City

The directors voted to hold the 1944 annual meeting in Pittsburgh, Pa., provided war conditions permit and proper hotel accommodations can be secured.

Honors and Awards

At the annual banquet the following awards were made—this being the first year in which the new awards have been given.

Honorary Memberships

To: Prof. Charles Gilman Hyde
University of California
Berkeley, Calif.

To: Harry E. Moses
Chief Engineer
Penna. State Dept. of Health
Harrisburg, Pa.

Convention Committee Heads

(Hotel Arrangements)
Fred G. Nelson, Chairman
The Dorr Co., Chicago

(Entertainment)
Harry E. Schlenz, Chairman
Pacific Flush Tank Co., Chicago

(Convention Finances)
O. T. Birkness, Chairman
Wallace & Tiernan Co., Chicago

The Chas. A. Emerson Award

To: Dr. Floyd W. Wohlman
Chief Chemist
Chicago Sanitary District
Chicago

"For long years of valued service in editing the *Seweage Works Journal*"

Successful Gadgeteer

Robt. W. Frazier, Manager
Sewerage Commission, Oshkosh, Wisc.

(The winner of both first and second prizes in Central States Sections Gadget Contest of exhibits first prize plaque.)

The Harrison P. Eddy Award

To: Harry W. Gehm
Assoc. Chemist
Dept. Water and Sewage Research
New Brunswick, N. J.

For his paper on "The Separation of Grease from Sewerage"—*Sewage Works Journal, July,* 1942

The George B. Gascoigne Award

To: Kenneth L. Mick
Chief Chemist
Minneapolis-St. Paul San. Distr.
St. Paul, Minn.

For his paper on "The Application of Laboratory Data in Sewage Plant Control" — *Sewage Works Journal,* Sept., 1942

Kenneth Allen Awards

These being voted by member associations to members of distinction and deserving of special recognition.

E. F. Eldridge (Michigan)
J. K. Hoskins (Federal)
R. S. Phillips (North Carolina)
R. H. Weiters (Iowa)
H. W. Wisely (Central States)

Central States Assn. Makes Awards

The following awards were made by the Central States Sewage Works Association, which held a business session and luncheon during the conference:

Honorary Membership, C.S.W.A.

To: Langden Pearse
Sanitary Engineer
Chicago Sanitary District

Gus Radebough Award

To: Kenneth L. Mick
Chief Chemist
Milwaukee-St. Paul Sanitary Distr.

For the same paper previously noted, for which he received the Geo. B. Gascoigne award of the Federation.

Gadget Award

To: Robert W. Frazier
Superintendent
Oshkosh, Wis., Sewage Commission

The prize winning gadget consisted of a device for making recorder charts on the reverse (plain) sides of used circular charts. Shift operators make these charts at night —something to keep them awake, according to Gadgeter Frazier.

Entertainment

On the first evening while the men were being entertained with a smoker and floor show, the ladies were attending a bridge party in the

Edw. B. Mallory
Director
Lancaster Laboratories
Hackensack, N. J.
and
C. Preston Witcher
Supt.
Sewage Treatment
Ann Arbor, Mich.

Ben S. Morrow
City Engineer
and
Supt. Water & Sewerage
Portland, Ore.
and
Chester A. Smith
Cons. Engineer
Burns & McDonnell
Kansas City, Mo.

Wm. M. Piatt
Consulting Engr.
Durham, N. C.
M. D. Lubratovich
Supt. Treatment Wks.
Duluth, Minn.
"Casey" Jones
Sales Manager
Simplex Valve & Meter Co.

"Bob" Quinn
Mathieson Alkali
New York
Charlie Rascher
Rascher & Betzold Inc.
Chicago
Floyd Mohlman
Chief Chemist
Chicago San. Distr.
(All of Class of 1912
Univ. of Illinois)

Walter A. Sperry
Superintendent
Aurora San. Distr.
Aurora, Ill.
and
R. G. Dobranich
Professor
Industrial College
Buenos Aires, S. A.

"House on the Roof," Hotel Sherman. In addition the ladies were well entertained with an NBC studio broadcast, trip to the Harding Museum, a luncheon and style show. On the closing evening was held the annual dinner, followed by a floor show of high merit and dancing thereafter.

While we have a word of praise for the entertainment committee, we take this opportunity to give credit to whom credit is due in the general running of the convention. At least one man practically lived in a telephone booth during the entire meeting. We refer to Norvel Anderson, vice-chairman of the convention management committee. To Mrs. Anderson, ill at home, was sent a beautiful lot of flowers and well wishes of the entertainment committee. And, as chairman of the ladies' entertainment committee, Mrs. Langden Pearse was recognized and deservedly applauded. It takes real work to put on a national convention

Made Honorary Members

Chas. Gilman Hyde
Prof. San. Engr.
Univ. California
Berkeley
(One of the Federation's real "wheelhorses")

Harry E. Moses
Chief Engineer
Pa. State Dept. Hlth.
Harrisburg
(Long-time Secretary of the Federation)

wound up with a plea for more "salesmanship" with engineering to secure greater recognition and more diplomacy for getting along farther and faster, with less wear and tear.

Maury Maverick, Director of the Government Division of WPB, made a special trip by plane from Washington to speak before the conference on the relationship of the sewage works authority and the Government Division of WPB, through its sewerage branch, established last Spring and headed by A. M. Rawn, as the choice of the advisory committee consisting of L. H. Enslow, George Schroepfer and Wm. Raisch. Mr. Maverick was complimentary of the judgment of the committee and proceeded to show how Rawn had revised and rewritten the P-141 priorities order to meet requirements while at the same time producing a document understandable to the sewage works man. Also he praised the work of Mr. Rawn in simplification of construction application procedure and elimination of many complicated details and loss of time.

Award Winners

Kerwin L. Mick
Captain
Sanitary Corps
U. S. Army
Pres. Cen. States Assn.
(The George Gascoigne Award)

Harry W. Gehm
Dept. Water and Sewage Research
Rutgers Univ.
New Brunswick, N. J.
(The Harrison P. Eddy Award)

Dr. F. W. Mohlman
Consulting Editor
Sewage Wks. Jour.
Sanitary Distr.
Chicago
(The Chas. A. Emerson Award)

E. F. Eldridge
Associate
Eng. Expt. Sta.
Mich. State College
E. Lansing, Mich.
(Kenneth Allen Award for Mich.)

R. S. Phillips
Superintendent
Water and Sewage Treatment
Durham, N. C.
(Kenneth Allen Award for N. C.)

and these Chicago folks who did such a splendid job of it throughout deserve high credit and appreciation.

Distinguished Guest Speaker

The Federation was honored by the presence in person of Mayor Ed. Kelly of Chicago, who opened the conference with a heart to heart talk by a former sanitary engineer to sanitary engineers. His theme was "Salesmanship with Engineering," and he struck home when he preached the essentiality of diplomacy in the engineer if he was to get very far in the world as a successful engineer. He praised the work of the sanitary engineers in improving the world in which we live and their present job to be done in maintaining the all important "home front" for which little reward might be expected. But, he

Rawn on Priorities

Following Director Maverick, Mr. Rawn, who served for a time as full time chief of the sewerage and sanitation branch of WPB, and more recently as chief consultant to the branch which he organized and set in operation, explained the application forms to be filed for new sewerage construction. To determine essentiality of a project Form 38 was devised. It consists principally of a questionnaire to be filled in by prospective applicants for new works or plant enlargement, sewer extensions, etc. After essentiality is determined the application for priority assistance with more details may be filed. The system has been effective in that applications are better filed and 80 per cent is the ratio of applications received now being approved without delay. In revising the P-141 maintenance and operation order the troublesome question of inventory was materially simplified by not requiring any sewage plant carrying less than a $1,000 inventory to be concerned regarding limitations on use from inventory and/or replacements. This results in at least 80 per cent of the plants now able to operate without concern as to inventory limitations. Mr. Rawn pointed out that the AA-1 priority for maintenance and repair of sewerage systems was still ample for securing all needs. In possible cases, wherein unusual conditions exist, help can be easily secured from the Government Division, should the P-141 order prove too restricting.

Mr. Rawn was called upon to answer numerous questions from the floor. One important question was that concerning the need for plant additions or improvements to take care of higher industrial waste loadings resulting from the war. The answer was that it would be best to file application with the Government Division and likewise through the

Industrial Division, with cross reference to each application. Where war housing is involved, new plants or additions required for minimum indicated treatment may be built. It was urged that the Regional Offices of W. P. B. be used as far as permissible in requesting assistance of any sort. These offices are now well manned and know the proper channelling for assistance requests. [A case proving the correctness of the latter advice was later reported by Mathews of Gary, Ind., and appears at another point in this report.—Ed.]

"Here and There"

A Quick Lunch
Jack Wirts, Supt.
Easterly Works
Cleveland
Doc. "Tony" Fischer
The Dorr Co.
New York
et al.

The Exhibits Manager
at His Desk
Beneath the
Blueprint Now
Slogan
"Art" Clark
Manager
W. & S. Mfrs. Assn.

Booth Chin-fest
From left Lauster (N. Dakota Dept. Health); Boyce (USPHS, Washington); "Vic" Ehlers (Texas State Dept. Health "Warhorse"); Dean Stapley (Okla. A. & M. College)

A question directed to Mr. Maverick concerned the possibility of priorities assistance to industrial plants, through the Government Division, when such plants were polluting a source of water supply with manufacturing wastes. Mr. Maverick replied that each case must be considered on its individual merits. In general, wherever public health is at stake or the effect on public welfare is serious, W. P. B. will do something about the matter and assist the public or private polluter to secure essential treatment facilities.

Fred G. Nelson of the Dorr Co., as a scheduled discussor, stated that the scheme of self applied priority numbers by purchasers had worked smoothly to date. Of the orders received by The Dorr Co., only 25 per cent carried the AA-1 rating, 25 per cent the AA-2 rating and 50 per cent an AA-3 rating. One of the tightest spots had been procurement of fractional horsepower motors. It was now required of the would be purchaser that before being permitted a new motor it must be shown that the purchaser had failed to find the type of motor needed in the stock of three used motor dealers.

Don E. Bloodgood, former Supt. of Treatment Works at Indianapolis and now Professor of Sanitary Engineering at Purdue, felt that sewage works operators were fortunate in having a plant manager of Rawn's calibre on the job in Washington. Upon study of the revised P--141 order and Rawn's interpretative statement (Govt. Div. Bul. No. 2) he had found no cause of concern over any restrictions on plant maintenance or operation. Bloodgood suggested establishing friendly relations with the suppliers of equipment since their knowledge of proper procedure in procurement had proved of high value.

Robt. O. Friend
President
and
J. A. Montgomery
V.-P. and Sales Mgr.
Lakeside Eng. Co.
Chicago

Michael Baker, Jr.
President
and
Robt. L. John
Design Engineer
Michael Baker, Jr.
Engineers
Rochester, Pa.

Majors Sanitary
Corps., U. S. Army
Wm. Culley
(N. Y. City)
A. E. Stillson
(Columbus, O.)
B. A. Poole
(Chicago)

Roland B. Jackson
Chief Engineer
Treatment Works
Jackson, Mich.
and
Paul Stegeman
Supt. Water & Sewerage
Midland, Mich.

Chas. Yeomans
President
and
Emil Ciabattari
Chief Engineer
Yeomans Bros. Co.
Chicago

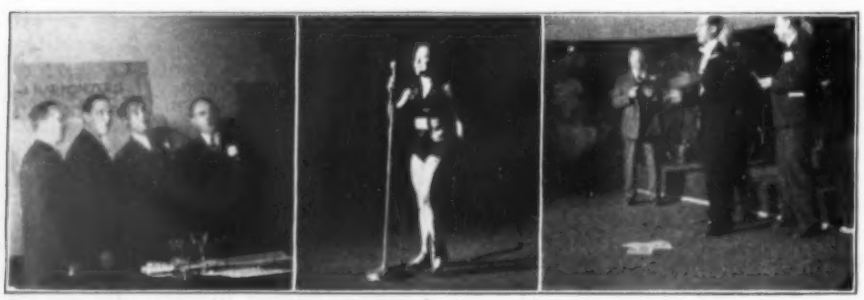
Cleary Pictures Sanitation in South America

The highlight of the Federation luncheon on the opening day was the illustrated talk by Ed. Cleary of *Engineering News Record,* who had just returned from a trip through South America. He spoke on "Sanitation Activities in the Latin-American Republics." With the exception of Argentina he had visited the more important communities in South America, where he found, with a few exceptions, that sanitation in South America stands today about where sanitation in North America stood in the decade 1880-1890.

At Barranquilla, Colombia, was found the finest water works and modern filtration plant seen in South America. At Belhorozante, Brazil, a small modern filtration plant is just being completed. On the rubber plantations of Ford was found a modernly operated water system and water really good to drink.

As to sewerage, modern treatment plants are practically unknown. The only one spotted was that at Rio de Janeiro—a Dorr equipped plant

Entertainment



National Champs
Amongst
Barber Shop Quartettes
Chicago's Harmonizers
Give a "Recital"
at WW&S
Headquarters

"That Red-Head"
Who Did Her
Stuff in
the Smoker Show

Nice Game of Poker
With the Magician
"Blueprint" Filby Got
Off Easy, But "Milt"
Rosen Came Out With-
out His Shirt

boasting a Worthington gas engine of 60 hp.

From what he had seen and learned on his trip, Mr. Cleary said that he could not share with many here in the U. S. the anticipation that large demands for sanitation equipment and engineering services was to come from South and Central America. With but four exceptions, South American cities will not be ready for sanitation equipment in any appreciable volume for 10 years at least. Of all the countries visited, Venezuela possesses the greatest potentialities as a near market for sanitation equipment. An American, Geo. C. Bunker (Honorary Member, A. W. W. A., 1943) is Chief Sanitary Engineer of Venezuela and is doing a remarkable job.

In respect to engineering services, Mr. Cleary had no encouragement to offer those who might be contemplating the possibilities of South and Central America. Interesting was the fact that Latin-American engineers outrank the medical men in professional standing. The best part of the sanitary engineering work is being done by the Federal Sanitary Authority, and consulting sanitary engineers are joining this Authority or going into other lines. A few sanitary engineers from the U. S. have been invited to work with the Federal Authority. A license is required of practicing engineers, requiring a South American degree, to acquire which necessitates at least two years of residence work.

Programmers

Major Rolf Eliassen
U. S. Engineers, New York City
Capt. R. M. Dixon
U. S. Engineers, Dallas, Texas
Capt. Clarence W. Klassen
Sanitary Corps., U. S. Army, Dallas, Texas
(Until recently in Procurement and Assignment Service, War Manpower Commission, Washington)

All in all, Mr. Cleary gave no encouragement to those who may have been expecting a sudden demand for engineering services and water and sewage works equipment in the immediate post-war period.

Wartime Operating and Maintenance Experiences

"Sewage Treatment Plant Operation Under Wartime Conditions," by William Mathews, Supt., Sanitary District of Gary, Ind.

Mr. Mathews reviewed the problems of a year ago and what has happened since that time, pointing out that there has been a considerable improvement in that year.

Of particular import to the operation of sewage treatment plants under present conditions has been the decrease in personnel and the inability to even obtain new personnel to train when trained men left. The average age of the men at the Gary plant has gone from 30 to 75 years since the war started. The turnover in help has been 125 per cent. In chemists alone, the turnover has been 800 per cent.

At this point Mr. Mathews departed from his prepared script to comment on the Army's oft spoken request for more men in the Sanitary Corps. Mr. Mathews mentioned that the Army should look within its own ranks because of the entire group of trained water and sewage chemists which had left the Gary plant; not one had been assigned to the Sanitary Corps or any other branch of the service in which their skill could be put to effective use.

Whereas, according to reports, the demand for sewage sludge as fertilizer has been stimulated in many cities for use in Victory Gardens, even to the extent of shortage of supply, Gary had no such condition. Mr. Mathews said that the demand for Gary sludge had actually decreased and he attributed the decrease to gasoline rationing.

Of particular interest at Gary was the handling by the Sewerage Division of W. P. B. of a case of needed materials under order P-141. Pump impellers at the Gary plant had been worn and scored so badly by grit and cinders during a storm runoff that pump efficiency had all but become non-existent. To repair the impeller meant obtaining special steel. Mr. Mathews went to the Regional Director of W. P. B. and explained the situation in detail. He was advised to wire the same explanation to Washington in detail. This was done and within four days an OK was received to proceed with the work and order the special material. For this Mr. Mathews publicly thanked the W. P. B. and, in particular, the Sewerage division handling the request.

Excessive inventories in sewage plants are not necessary, said Mr. Mathews, and should not be kept, even though it may be hard to obtain materials from the supplier.

Roy Lanphaer, Supt. Sewage Treatment, Worcester, Mass., discussed Mr. Mathews' paper, mentioning some of the same plaints and how he had met or combatted them in his plant.

"Maintenance of Sewerage Systems in Wartime," by John H. Brooks, Jr., Supt. Bureau of Sewers, Worcester, Mass.

Mr. Brooks outlined the problems of maintenance of sewers in wartime, stressing the matter of obtaining tools, other equipment and supplies, and manpower. The effect of governmental control and other "headaches" also received comment. In spite of all of these disagreeable conditions, Mr. Brooks said that "it is all simple compared to what the soldier has to go through."

High Rate Biological Treatment

"High Rate Biological Sewage Treatment," by Samuel A. Greeley, Greeley and Hansen, Consulting Engineers, Chicago, Ill.

As high rate biological sewage treatment processes, Mr. Greeley considered both high rate filters and certain short period aeration methods. Their broad objectives he cited as: "Means of accomplishing the same degree of treatment at lower cost and with lower space requirements than usual processes."

According to the present understanding of high rate filtration, some three to four thousand pounds of B.O.D. removal may be applied per acre foot per day, as compared with the usual application of three to four hundred pounds of B.O.D. High rate filters do operate with applications of as high as fifteen to twenty thousand pounds of B.O.D. per acre foot per day, but these rates do not give a high degree of removal and are considered as rough filters. Conventional activated sludge treatment plants provide about six hours' displacement in the aeration step, while high rate plants utilize from two to three hours. Mr. Greeley reviewed the various processes developed and promoted, defining high rate filters as of the recirculating or non-recirculating type, and aeration proc-

Programmers

Harry A. Faber, Chemist
The Chlorine Institute, Inc., New York, N. Y.
Wm. W. Mathews, Supt.
Sanitary District of Gary, Ind.
LeRoy W. Van Kleeck, Senior Engr.
Conn. State Dept. Health, Hartford

esses as the step aeration, distributed load, or contact aeration type.

The best method of relating efficiencies is, of course, by parallel performance in the same plant and under the same conditions. Not only is the character of the sewage very important, but it may exhibit sudden changes in character. The many considerations which prevent a ready answer to such problems were condensed by Mr. Greeley in a statement of wide implications: "Sewage disposal problems do not lend themselves to simple solutions because inherently difficult."

Slides were employed to summarize extensive data relating to B.O.D. removal by aeration processes, by single stage and by double stage filtration. An appendix to be published with this paper provides detailed analytical data and can be extended to computations of estimated costs. Comparative costs, however, are always affected by local conditions such as the area and value of the plant situation, so that these conditions must be known to the engineer.

R. M. Dixon, Captain, Corps of Engineers, U. S. A., Southwestern Division, Dallas, Texas, in discussing this paper, commented especially on the problems peculiar to army camp sewage. Factors such as the manpower available for plant operation, provision for heavy peak flows, and the limited dilution available in streams of the southwest are important to consider. He indicated that short period aeration provides adequate treatment only for weak sewages.

"Industrial Waste Treatment in Wartime," by F. W. Mohlman, Director of Laboratories, The Sanitary District of Chicago, Chicago.

Dr. Mohlman described the characteristics of a considerable variety of industrial wastes resulting from specialized war industries and pointed out that treatment methods are lacking in many cases because these problems are either of less importance than production problems or because there is a lack of necessary equipment.

The wastes from TNT manufacture, for example, are quite acid, high in color even on dilution, have practically no B.O.D. and are quite stable. In laboratory tests a color of 600 ppm. may be reduced to 75 ppm. with chlorine, but excessive amounts are required. Studies have shown that storage and regulated discharge at periods of high stream flows provide adequate treatment. Even if river water is used as a source of water supply, a color increase of 15 ppm. from such discharge is considered acceptable.

This waste is of very low toxicity —fish will live in dilution of 1 to 800, and dilutions 1 to 10,000 are acceptable even where water is to be used for a potable supply. Evaporation may be required where dilution is clearly inadequate, but is very costly. Dr. Mohlman recommended that, as a wartime emergency method, dilution of wastes in streams should be employed wherever this disposal method is possible. This practice, of course, is the reversal of ordinary procedure which recognizes the desirability of waste treatment.

Among several other wastes high in acidity, those from the manufacture of airplane parts contain chromic acid and hydrofluoric acid; caustic soda is used for pretreatment of these wastes before discharge to sewers. Ethyl alcohol production has increased more than 50 per cent over 1942, largely due to the new synthetic rubber industry. The waste from alcohol plants would, if not treated, have a population equivalent of 27 million.

A new type of waste, but not a large problem, will result from the food dehydration industry. Meat packing wastes and iron pickling liquors still present problems of increasing importance. One gratifying wartime effect is the successful development of and progress made in our national fat recovery program.

LeRoy W. Van Kleeck, Senior Sanitary Engineer, Connecticut Department of Health, Hartford, Conn., added a number of examples of wartime industrial waste treatment problems. In his opinion, the discharge of those wastes difficult to treat should even be considered acceptable, when properly controlled, after the war.

Chromium waste at one plant in Connecticut caused a special problem. While toxic, this waste does not disinfect and chlorination is required, but the ortho-tolidin test proved useless for residual control. Cutting oils, discharged directly to sewers, have caused scum problems in sewage treatment plants, sometimes requiring as much as four times the normal man-hours ordinarily spent for scum removal.

Sulfur dye wastes have so added to the chlorine demand of sewage at some treatment plants as to increase a normal 10 to 12 ppm. chlorine demand to over 60 ppm. These wastes are treated by providing concrete holding basins and controlling the discharge to reduce the difficulties resulting from fluctuating flow and strength. Necessary changes at sewage treatment plants are frequently preferable to pretreatment at the producing plant. Studies by the State Water Commission have shown chlorine to be the cheapest and most satisfactory oxidizing agent for sulfur dye wastes.

Fiber wastes result in a thick, heavy scum in digesters and the use of a fire hose has been required to break the mat. Vacuum filtration of scum, rather than sludge, has been employed. The use of screens at fiber mills is especially helpful, but supervision of such installations at the mills is necessary. Metal plating solutions can be handled at sewage treatment plants, even in sludge digesters, if the copper concentration does not exceed 10 ppm. In one city it has been necessary to filter raw sludge because the concentration of copper is so high as to upset digestion.

[*Acknowledgment:* Starting with "High Rate Biological Treatment," from that point throughout to the end of this first installment represents the reporting of Harry E. Faber, Editorial Associate. Part 2 of this report will appear in the December issue.]

Edwin Hurd Killed in Plane Crash

Edwin Hurd, architect and son of Charles H. Hurd of Indianapolis, was accidentally killed in a plane crash near Camp Atterbury, Ind., on Oct. 3d. A lieutenant in the Civil Air Patrol, Mr. Hurd had just completed taking part in a CAP air show when his plane dived into a nearby lake.

Edwin Hurd

Edwin Hurd was a graduate of Cornell University and was an architect and engineer in his father's firm, the Charles H. Hurd, Engineers. His latest plant was the 40 mgd. sewage plant at Hammond, Ind. Lt. Hurd was a member of the AWWA, the Central States Sewage Works Assn., Scientech and Exchange Clubs. He is survived by three children, a sister and his father.

PENNSYLVANIANS HOLD JOINT MEETING

Attendance at Pittsburgh Conference Better Than 170

IN Pittsburgh, Pa., on September 23rd, Western Pennsylvania Section of A.W.W.A. and the Western Division of the Pennsylvania Water Operators Association held a one-day joint meeting, preceded by an informal "Get Together" the evening before and ending with a Dinner Session at which John H. Murdoch, President of the Pennsylvania Water Works Association and State Water Coordinator for Pennsylvania, was the speaker.

With an official registration count of 170, the attendance approximated 200. The sessions were intentively attended to hear a heavy program put through by Chairman Chester F. Drake of Pittsburgh and Discussion Leaders E. E. Banks on and D. C. Morrow.

President Morris Attends

Dean Sam. B. Morris, now head

National Directors

(Director-Elect) Chas. H. Young, Distr. Engineer, Pa. State Dept. Health, Meadville

(Incumbent) Jas. H. Kennon, Managing Engr., Bureau of Water, Pittsburgh

of the Department of Civil Engineering at Leland Stanford University and former Chief Engineer and Sup't of the Pasadena Water Department, as President of A.W.W.A., was on hand to review the recent activities of A.W.W.A., its problems and future plans. In respect to the latter he emphasized the work ahead for the recently organized Joint Committee on Water and Sewage Works Development which constitutes the official post-war planning and development body comprised of representatives from the A.W.W.A., the Sewage Works Federation, the New England Water Works Association and the Water and Sewage Works Manufacturers Association and financed by these associations

Chairmen

(Retiring) Chester F. Drake, Supt. Filtration, Pittsburgh

(Incoming) Edward C. Trax, Supt. Filtration, McKeesport

on a pro-rated basis of membership dues received by each and materially fortified by a $10,000 contribution from the Manufacturers' Association.

Mr. Morris explained that the aims of the committee with its slogan of "Blue Print Now!" was to encourage water utilities and municipalities to get thoroughly ready with water works and sewerage projects before the war comes to an end; that "thoroughly ready" meant that plans and specifications should be developed to a point where bids could be taken on practically over-night notice in the early post-war period of adjustment. By so doing, Mr. Morris explained that the experience of great delays and costly rush effort experienced in the anti-depression public works program would be avoided in the post-war program of resuming public works construction at the most propitious time. Mr. Morris noted the good fortune of the Committee in securing Abel Wolman as its Chairman, Harry Jordan

Featured

John H. Murdoch, Attorney, Am. Water & Elec. Co., New York (Dinner Speaker)

Honored

John N. Chester, Retired President, Chester Engineers, Pittsburgh (Fuller Awardee)

as Secretary, and E. L. Filby of Kansas City as its Field Director with headquarters in the New York offices of A.W.W.A.

Filby on "Blue Print Now!"

E. L. Filby was on hand to outline the "Policy, Platform and Program of the Development Committee." He explained that, in addition to post-war projects, there was almost immediate need for water supply improvements in a great many localities which would constitute development that could not be delayed for the war's end. In the case of sewage disposal the number of immediately necessary projects were much more limited, as to be expected. The big problem, however, was that of getting set for the maximum promptness with which water and sewage betterments can be executed during the most critical first year

Officers

Jas. G. Griffiths, General Manager, Water Authority, New Kensington (President, Penna. Operators Ass'n)

Earle P. Johnson, Division Manager, Wallace & Tiernan, Pittsburgh (Secy.-Treas., Penna. Section A.W.W.A.)

following the "cease-firing" order and demobilization. This would necessitate all of the cooperation that the Committee could be given through energizing state, sectional or local agencies and committees.

Mr. Filby cited cases wherein the added war load had so overtaxed water supply systems as to require some immediate improvements and augmented supply. He then referred to such large post-war projects as that of Denver, Colo., where the program calls for an expenditure of $1,250,000 annually for 5 years on water supply, and sewerage projects to cost $750,000 were in the ready-to-go stage. On the other end he cited the little town of Rawlings,

Wyo., and its post-war program as an example of what the many small towns can and should do.

Fuller Award to John Chester

At the luncheon in his honor, 79-year-old John N. Chester, retired Pittsburgh consulting engineer and owner of three water works, was presented the George W. Fuller Award bearing the citation—"To John N. Chester for his outstanding ability and leadership as designer and owner of water works."

Officers

The following were chosen officers of the Western:

Chairman
E. C. Trax, McKeesport.
Vice-Chairman
D. E. Davis, Pittsburgh.
Secretary-Treasurer
E. P. Johnson, Pittsburgh
*National Director**
Chas. H. Young, Meadville.

Trustees—L. S. Morgan (Greensburg), E. C. Goehring (Beaver Falls), T. C. Brenner (Washington, Pa.).

*Takes office for 3-year term at close of 1944 A.W.W.A. Conference succeeding Jas. H. Kennon of Pittsburgh.

Water Works in the War and in the Future

The following are some of the highlights from the estimable dinner address of John H. Murdoch, Chief Attorney for the American Water Works & Electric Co., and President of the Pennsylvania Water Works Association for a number of years.

One never hears of a water utility being chosen to receive the Army-Navy "E" award of merit for production efficiency. Why? asked John Murdoch. Why? Because as water works men we have a heritage of "Service to the Maximum!"—and they can't do more in wartime than these men have been doing, year in and year out, in the effort of producing the most perfect product possible and giving 100 per cent service. No more could be accomplished; no more expected—all with no glamor; no tinsel. Doing the job well and keeping at it is the only water-works man's award that would ever satisfy him.

Amongst some "beliefs" expressed with high sincerity by John Murdoch, he considered it the first duty of the water-works man to get filled with war spirit—a will to do everything possible to hasten the end of the conflict. There should be less worry over what the Government is going to do—or anyone else. Many of the regulations of Government in wartime are objectionable, of course; but, with the right spirit the job can be done and the regulations will not weigh so heavily. They will begin to mean little or nothing. To win the war sooner it is necessary to get the spirit of saving and of doing without. But, said Mr. Murdoch, the very first requirement is to do nothing or leave nothing undone that may not keep the plant machinery in proper operating condition. On the other hand "polishing maintenance" is something that can and should wait, and every bit of manpower possible should be released. Such curtailment is in keeping with the war spirit and at the same time money in the reserve will grow for use when most needed later.

As to extensions, these should be considered as inflationary and, if in connection with real-estate developments, a gamble. If to the homes of war workers such extensions must properly be considered a governmental service.

In the matter of wartime plant protection, Mr. Murdoch stressed the point that bombing dangers seemed mostly mythical, but that the danger of sabotage was still to be considered. It was as important now as ever to watch the critical places and employees.

In discussing the Mutual Aid Plan which the war has brought into the water supply industry, Mr. Murdoch as State Water Coordinator praised the work of L. D. Matter of the Penna. Dept. of Health, recently appointed Deputy Water Coordinator. Mr. Matter, in activating the Mutual Aid Plan, is developing a central inventory of real worth, it being generally accepted as a plan of continuing worth after the war.

Discussing the "Home Front" aspect of water supply service, Mr. Murdoch deplored the fact that we have failed woefully in the somewhat feeble effort to instill in key water-works employees that they are truly indispensables and really "home-front soldiers." Water-works men must cease thinking that in their jobs they are not of the highest value to their country in the prosecution of the war.

In looking ahead to the immediate after war period, and the part to be taken by water-works men, Mr. Murdoch said that *now* is the time to learn and rehearse our parts. In getting ready to take our part in providing jobs and avoiding a sad aftermath in the Nation's economy it is time to *"Blue Print Now!"*, save the money, know your "part" thoroughly before being called on the stage to do your bit. In the post-war development program for water and sewage works Federal grants are to be offered. If these handouts be accepted the ensuing regulations must be accepted. And, the next question to be answered is "What sort of a Nation is to result in the end?" Facts are, grants can not be justified.

Mr. Murdoch warned against looking for or planning any low wages in the post-war period. To set our sights in the direction of lowering of wages is to invite repudiation of national, state and local debts and calamity. The answer to the wage problem is that of training the workman to produce more, support the young and the old with food enough for all bought from decent wages. The aim should be for a "machine slave age" of increased production and an ample wage.

Of course one could not expect to do full justice to the sort of talk that John Murdoch, a trained lawyer and speaker, makes. It can be said that his philosophy is of the highest type and that this Pittsburgh address was amongst the best of his career. What John Murdoch said in brief was that water works men are indispensables in this greatest of all wars and that their parts in providing projects for supplying jobs in the home community and in the manufacturing plants of other communities were to be important ones. To play such "parts" effectively, however, the rehearsal should not be delayed for a time nearer the war's end, but to follow the axiom of "Blue Print Now!"

Technical Sessions

The first paper on the technical program was that on **"Acid Mine Drainage Studies in the Ohio River Pollution Survey,"** by M. Le Bosquet, Jr., Senior Engineer, U. S. Public Health Service, and E. W. Lyons, Senior Engineer, U. S. Bureau of Mines.

The paper, presented by Mr. Le Bosquet, pointed to the fact that the No. 1 pollution problem in the Ohio Basin is the iron-acid mine drainage wastes which have been estimated to create damages to domestic water supply amounting to $364,000 annually and to industrial water supply about $407,000. Adding other damages from these corrosive acid waters, the estimated total is better than $2,000,000 each year in damages from acid mine drainage.

These damages had been cut in about half by corrective measures —a combination of mine sealing and storage reservoirs, providing dilution in periods of low stream

flow in the Alleghany and Monongahela rivers. Mr. Le Bosquet, with diagrams and chemical reactions on the screen, explained the conversion of iron sulphide into the sulphate, through oxidation in the mines, and how the sulphate hydrolized into sulphuric acid and iron hydroxide precipitate in the streams. The corrective sealing off of worked out galleries in operating mines, and complete closure of abandoned mines by sealing all entries and ventilation openings, by preventing air entry and oxidation of the pyrite (iron sulphide) reduces materially the production of sulphate and acid. Large impounding dams on the two rivers have been constructed to provide dilution. The sealing cost has now reached $2,500,000 and annual charges for maintenance, interest, etc., is $870,000. Advantages gained are estimated as 125 per cent of annual costs. It is estimated that expenditure of $3,500,000 in mine sealing is justified with $450,000 annual charges. It has been concluded from these studies that a dollar invested in mine sealing is worth more than a dollar invested in dilution reservoirs.

Chas. A. Finley, Consulting Engr. of Pittsburgh, argued the value of proposed reservoirs on the Alleghany for providing minimum stream flow three times the present minimum. Amongst the advantages were cited a more uniform quality of water, avoidance of acid peaks; better dilution, making for lower cost sewage treatment; and, the recreational benefits resulting.

Chas. H. Young, District Engr. Penna. Dept. of Health, was of the opinion that stream flow augmentation in overall benefits outranked mine sealing with its continuing problems of maintenance and costs. Therefore, it was his opinion that the proposed construction of additional dams for flow and flood control in addition to acidity control should rank first and the mine sealing program to the extent of economic feasiblity should follow. Already 9 dams were built or under construction in the Alleghany and Monongahela Basins.

No. 1 Guests
The President of A.W.W.A.
Samuel B. Morris, Dean of Engineering, Stanford University, California
and
E. L. Filby, Field Director W&S Wk's Development Comm. A.W.W.A. Headquarters, N. Y. City

E. W. Lyons, co-author of the paper and formerly in charge of the mine-sealing program for the U. S. Public Health Service, in replying to questions stated that only 10 per cent of total acid contributed in mine drainage comes from active mines and 90 per cent from abandoned workings. Although it had been found possible to secure an 80 per cent reduction in the acid contribution, actually a 50 per cent reduction represented the practical and economic reduction through the sealing procedure and continuing expense for maintenance of such seals.

L. H. Enslow, Editor of WATER WORKS AND SEWERAGE, said that after listening to the arguments it seemed simple to reason for the combination of dilution and prevention. The importance of prevention had its greater appeal because of the matter of sulphate contamination as much as acidity. Then the dilution would reduce the concentrations of sulphates and neutralize the acid in part if not completely. But, such neutralization was no corrective for the sulphate problem and hard scale or boiler priming when softening converted the gypsum (calcium sulphate) into sodium sulphate. Recalling the axiom that "An ounce of prevention equalled a pound of cure", it seemed logical to proceed to the practical limit with mine sealing and utilize the flow regulation scheme for its added advantages. To consider the curative ahead of the preventative was to all appearances putting the cart before the horse. To his belief it would be very difficult to make any thorough estimate of the high cost to industry or domestic consumers which sulphate hardness entailed through a combination of hard scale, spotty corrosion, priming, blow-down, etc.

Cyrus W. Rice, Consulting Chemical Engineer, Pittsburgh, confirmed the beliefs of Mr. Enslow and his reasoning, saying that many industries had avoided the Pittsburgh area, largely because of the poor chemical quality of water supply.

[Of considerable interest in this matter of dilution and neutralization with impounded water on the Monongahela and Alleghany, is the fact that the normal total alkalinity of the impounded Monongahela water is only 10 ppm.; the Alleghany 25 ppm. At the same time, by far the most acid laden is the very low alkalinity Monongahela.—Ed.]

The Conservation Program and Methods of Controlling Water Waste

A Round Table
Led by E. E. Bankson, The Chester Engrs., Pittsburgh

Mr. Bankson introduced the topic of "Water Conservation" as a patriotic cooperative effort with the Office of War Utilities to reduce

Programmers

(1) *D. C. Morrow (Symposium Leader) Div. Mgr., Am. Water & Elec. Co., N. Y. City.*

(2) *Wm. Insull, Western Manager, N. East Water & Elec. Corp., Latrobe, Pa.*

(3) *Chas. L. Fox, Chief Engr. and Supt., Pennsylvania Water Co., Wilkinsburg, Pa.*

(4) *Larry S. Morgan, Distr. Engineer, Pa. State Dept. Health, Greensburg, Pa.*

(5) *M. LeBosquet, Jr., Senior Engr., U.S.P.H.S., Cincinnati, Ohio.*

(6) *Richard B. Adams, Chief Chemist, Pennsylvania Water Co., Wilkinsburg, Pa.*

(7) *E. E. Bankson (Symposium Leader), The Chester Engineers, Pittsburgh, Pa.*

E. C. Goehring, Asst. Mgr., Water Authority, Beaver Falls, Pa.

"Bill" Reinicker, Vice-Pres. in Charge Operations, N. East Water & Elec. Corp.

C. C. Wedemeyer, Mgr., Water Dept., Latrobe, Pa.

J. R. Hampson, Operator, W. Penn Co., McDonald, Pa.

P. R. Lutton, Mgr., Elwood Water Co. Elwood City, Pa.

Boyd Bennett, Pres., N. East Water & Elec. Corp., New York, N. Y.

U. F. Ringling, Dir. Engr., N. E. Water & Elec., Le Moyne

waste, save power, fuel, chemicals, pump wear, plant extensions, etc., deserving the immediate efforts of the water supply industry. In this his first thought went to complete meterization, which had shown reduced demands (pumpage) of almost 50 per cent immediately—in a few cases even more. Where metering exists, a campaign against other than essential and minimum water use is being advocated, but the question of minimum revenues to carry on under higher operating costs is to be considered in attempting water use curtailment by other than the minimum use consumers at present. The most overall effective, prompt and economical procedure would seem to be projects to detect unmetered water being lost through faulty pipe systems—the best known method being the pitometer survey of the system.

As to overhauling and testing meters, the unaccounted-for water would be reduced and revenues increased normally; but the total pumpage would be reduced but little unless an anti-extravagance and stop waste campaign be carried on at the same time. The reason for this is that minor leakage (under 100 gals. per day rates) on the customers' premises is not registered through many meters, whereas the total figure for such leakage over the entire system will be a sizeable figure in gallons pumped per day. Improved meter maintenance will reduce the water uncollected for, without necessarily reducing the total delivered into the system.

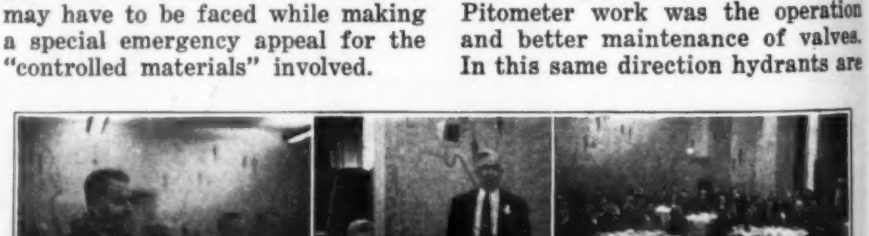
"The Water Conservation Plan" was at this point set forth by H. Lloyd Nelson, representing the Water Division of the Office of War Utilities. Mr. Nelson credited A.W.W.A. with great assistance in developing the plan for water conservation recently launched. He described the forthcoming "Waste Reduction and Conservation Manual" under production by A.W.W.A., for distribution to water utilities at a nominal charge to help defray its cost of production. (A review of this timely manual is to be found elsewhere in this issue.—Ed.) Mr. Nelson displayed some sample sketches of little "Willing Water" in some of his many duties and services and methods wherein the consumer can put him to best "use without abuse"—i.e., waste. Mr. Nelson exhibited specimens of newspaper copy and pictures designed to encourage water conservation—notably in the rotogravure section of a Philadelphia Sunday paper.

Mr. Nelson then turned to the important question of possible supply deficiency at some points, due to drought or excessive demands created by war conditions. He said that any manager faced with such possibility should apply to the Office of War Utilities for assistance which has already been arranged for. The most important immediate procedure would be that of preparing plans and estimates of materials and equipment to be needed in correcting a shortage situation. If the Water Division of W.P.B. has this information in advance, the materials can be placed on the predicted requirement calendar and alloted under the C.M.P. system for the water works industry. These materials need not be ordered before actual need is inescapable. In fact they need never be ordered, but if not in the allotment when needed a serious delay may have to be faced while making a special emergency appeal for the "controlled materials" involved.

In reply to a question Mr. Nelson said that meters could still be had where need can be shown as an aid in the war conservation effort. The Housing Authority can secure meters without difficulty

Following Mr. Nelson, Leader Bankson called on the following scheduled participants in the Conservation Round Table Discussion:

Chas. L. Fox, Chief Engr. and Supt., Pennsylvania Water Co., Wilkinsburg, Pa., reported that the completely metered system of his company showed a record of better than 90% of the water pumped accounted for. The domestic consumption ran only between 25 and 30 gals./capita/day, with 60% of the meters showing less than the quantity permitted under the minimum monthly billing. The reduction of water unaccounted for had been accomplished through routine pitometer survey and making every employee of the company leak-detection minded. All outside men had been trained in listening for leaks. Holding waste to a minimum required eternal vigilance, that being the only known formula. He also credited the master Venturi metering of the system as a marked aid—a "watch-dog" measure yielding returns. He believed strongly in standardization in materials and equipment. Since inability to continue with copper for service lines, the lead substitute "Tubeloy" and cast-iron had been utilized and cast-iron was standard for the mains. Interestingly, less leakage had been recorded on lead-alloy service lines than on lead. There was no explanation offered. In any conservation program, Mr. Fox felt that fire-flow meters on private service lines were an important adjunct and had saved his company many a dollar. He also commented on the rapid leak correction service developed and put to good use on the Wilkinsburg system. A by-product of the routine Pitometer work was the operation and better maintenance of valves. In this same direction hydrants are



During the Bankson-Nelson Act

President Sam Morris listens with some amusement, while leader Bankson (center) has been put on the spot by a heckler in the audience. However, by his side is W.P.B.'s Lloyd Nelson, ready with "reinforcements" to answer said "sharpshooter" (right) who later rose for another shot at Federal dictation.

inspected and operated twice yearly.

In short, Mr. Fox rather proved that the "eternal vigilance" he referred to, in keeping water and revenue losses to a minimum, automatically results in "by-product" betterments in the maintenance and operation of a water system.

Jas. H. Kennon, Managing Engineer, Bureau of Water, Pittsburgh, Pa., reporting that only 68,000 out of 110,000 services are now metered in Pittsburgh and much attention is given to pumping station records. Periodic Pitometer surveys are made. Through combined efforts at leak detection, metering of important consumers and reducing waste, the 1918 pumpage of 48.2 billion gallons had been reduced to 29.4 billion in 1942—almost cut in half.

Jas. G. Griffiths, Gen'l Manager, Municipal Authority, Kensington, Pa., which until January 1943 had been the Kensington Water Co., reported that to meet operating and carrying charges in such cases as his, any appreciable reductions in metered uses might well prove financially suicidal. Now metered 100%, Mr. Griffiths pointed to a record of 37.4% unaccounted for water in 1923 having been reduced to 14.2% by 1942—admittedly higher still than should be, and something to work on further. Mr. Griffiths was of the opinion that water stealing in sundry ways was of greater consequence throughout the country than normally suspected.

Operation of Water Works in Wartime

(A Symposium led by D. C. Morrow, Division Manager, American Water Works and Electric Co., New York)

In introducing this topic Mr. Morrow touched on the problems of manpower and holding key men in water works and the increased plant loads experienced by many water utilities. He then called on the following scheduled participants:

John M. Rice, Consulting Engineer of Pittsburgh, in citing construction experiences and wartime problems therein, covered the adaptation of substitute materials, the uncertain time of completion, the rapidly mounting labor and materials costs. Transite pipe had been used under conditions where normally cast-iron would have been used. Steel tanks, even back in 1941, were almost unprocurable even for installation at a steel plate mill. Getting over the Government hurdles in one month, it was still a whole year before the materials for fabrication could all be secured. Manhole castings and covers constituted another tough spot and of all the units valves were the toughest of all to procure. In brief, he had found the Government hurdles less of a problem than securing deliveries from suppliers.

L. S. Morgan, District Engineer, Penna. Dept. of Health, Greensburg, Pa., in discussing wartime problems in filtration in his territory pointed to consumption increases for 25 plants at 25% to 80% with maximum for a single month of 120%. One filter plant was 60% overloaded above the accepted standard of 2 gal./sq. ft./min. and two at 50% overload. However, U. S. Treasury Standards for effluents had been met. Mr. Morgan cited the fact that today improvements in raw water preparation, better filter washing, modern chlorination practices, made such overloads possible, even though the effluent in some instances lacked in "polish" and sparkle.

Wm. Insull, Western Division Mgr., North East Water and Electric Service Corp., Latrobe, Pa., did an excellent job of enumerating some things that might be done during this period when extensions and major maintenance must wait. Amongst those things which can and well might be done at the present opportunity he listed—

(1) Surveys for leakage.
(2) Valve checking and renovation.
(3) Hydrant testing and repair.
(4) Resetting of curb boxes.
(5) Making hydrant flow tests.
(6) Checking and overhauling pumping equipment.
(7) Painting and renovating.
(8) Checking allocation of expenses and operating costs.

Mr. Insull, in addressing his suggestions to the small plant operator in particular, said that if water works men will use the time available in doing these things there will not be much time left for grumbling. In his opinion, too much time had been devoted recently to incidental and relatively unimportant problems.

R. B. Adams, Chemist, Penna. Water Co., Wilkinsburg, Pa., related some interesting observations on two filters used for comparing sand and "Anthrafilt" (ground and graded anthracite). The "Anthrafilt" was of 0.58 effective size and uniformity coefficient of 1.47. The sand had effective size of 0.51 and uniformity of 1.32. Operating at rates of 3¼ gals./sq. ft./min. the Anthrafilt unit after 15 hours of service showed loss of head of 35 in. as compared to 51 in. for the sand-unit. At the same time the rate through the sand unit could not be maintained at 3¼ gals./sq. ft./min. Particularly noticeable was the difference in rapidity of choking of the two beds when activated carbon was being applied. In this case the sand filter had dropped from the 3¼ gal. rate to 1 gal./sq. ft. after only 9 hours of service. Mr. Adams pointed out that at the 3 to 4 gal. rates per sq. ft. it was shown that the coal filter passed about 2 parts of turbidity unless that of the applied

(1) *B. J. Lechner, Secy. & Treas., Water Commissioners, Erie, Pa.*

(2) *D. E. Davis (New Vice-Chmn.), The Chester Engineers, Pittsburgh, Pa.*

(3) *Boyd Bennett, President, N. East Water & Elec. Service Corp., N. Y. City.*

(4) *Lee B. McMahon, District Manager, "Water Works and Sewerage," Cleveland, Ohio*

(5) *J. S. Columbia, Supt. of Filtration, Langeloth Water Co., Burgettstown, Pa.*

(6) *Myron G. Mansfield, Vice-President, Morris Knowles Engrs., Pittsburgh, Pa.*

(7) *Chas. J. Bruce, Supt., Evitts Creek Water Co., Cumberland, Md.*

water was held at 8 or under. Thus it was once more demonstrated that for sustained rates of 3 gal./sq. ft./min. or more through filters a coarse media is required, but at the same time there appears proof of the necessity of increased operating care in coagulation practice in order that an applied water of low turbidity (8 or under) be insured on top of the filters if an effluent of acceptable clarity is to result.

E. C. Goehring, Asst. Manager, Municipal Authority, Beaver Falls, Pa., relating experiences with an increased loading of 40% on the Beaver Falls filter plant, told of the necessity of basin cleaning at monthly intervals. Industrial wastes had been the chief problem in which activated carbon had been a God-send in these times and Break-point Chlorination a life saver. With the latter, requiring a 5 ppm. dosage to the raw water providing 1 to 1.5 ppm. residual after a 10 minute contact, it had been possible to produce taste-free water carrying 0.6 to 0.8 ppm. residual out into the system for safety. For phenolic wastes during winter, carbon had been superior to high chlorination.

In coagulation Victory alum has been proving very satisfactory and frequently less is required than of the purer pre-war alum, and flocculation is superior. The single problem is that of keeping the insolubles in suspension during feeding and travel to the point of application. Victory alum appears to be here to stay at a saving to water works.

Mr. Goehring was more enthusiastic than ever concerning his Palmer Filter Agitators. With these mechanical bed washing units he had found no mud binding of filters under the heavy overload, nor had the wash water risen because of the extra load. Mr. Goehring expressed high gratitude to the chlorine suppliers for their understanding and service, while the chlorine has been of the best quality.

STOP WATER WASTE!

With Aid of New AWWA Guide

"Don't be a drip"—"Stop Water Waste;" "Use Water Usefully;" "Water Will Help Win the War—Don't Waste It!" Thus speaks little "Willing Water." Although "Willing Water" is a copyrighted cartoon character of the AWWA, it is available without charge on request of anyone who wishes to use the character in advertising, posters, or other forms of publicity that will help in local campaigns to conserve water. "Willing Water" appears in the booklet, prepared as a guide to "WATER CONSERVATION," and recently mailed from AWWA headquarters to all water plants in municipalities over 10,000 population.

This packet has been issued as an aid to the waterworks executives in carrying on their local campaign as a part of the national voluntary campaign to aid the war effort by conserving water, power, light, gas, coal and communications.

In the foreword by Harry Jordan it is pointed out that "wartime is no time for civilian waste" of water, food, fuel, or other services—and whether you have ever engaged in publicity campaigns before is not important—Play your part in this campaign."

Within the hundred pages constituting the packet is included the "Report on Voluntary Conservation Program for Water Utilities" as adopted by the Task Committee of the Water Industry. Therein are outlined the objectives, nature of a water conservation program, general plan of campaign, and conservation control measures, as well as suggestions for publicity media, and a publicity manual. It is in accordance with this report that the AWWA has developed the packet.

In order to bring forcefully to the attention of the water works officials the results obtainable, the packet contains a section on the British Water Economy Campaign which has shown that "It Can Be Done."

No. 1 Job is to "Put Your Own House In Order" and means of doing that job are amply described and accompanied by excerpts from reports of cities who have made water waste surveys and corrected leaks. These reports give excellent proof of the extent of water waste in distribution systems and the savings that can be accomplished in power, fuel, and chemicals, when this wastage is stopped.

One section of the booklet is devoted to a community cooperative plan suggesting ways and means of organizing the community for a stop waste campaign. Another section is devoted to the problems of water waste by industrial consumers. "Spreading the Sprinkling Load" is a section which contains samples of ordinances, resolutions, and rules and regulations that may be necessary to establish restricted sprinkling. Sample newspaper advertisements are also shown.

Publicity by radio is another suggestion for bringing the importance of this water conservation to the customer and three suggested radio talks are given. These can be easily altered to fit the community concerned. Sample news releases are also given with the suggestion that water works men should keep closely in touch with local editors and provide them with news stories of the progress of the campaign.

The last section of the book contains six advertisements wherein "Willing Water" gives forth his gems of wisdom and admonishment. These ads. may be ordered from AWWA in mat form, in 2- 3- or 4-column size. Also included are miscellaneous advertising ideas and copy; such as posters, stickers and leaflets. Among the posters is one showing the householder how simple it is to fix a leaking water faucet. Another shows a dripping faucet with the caption, "Don't Be A Drip"—"Be Patriotic, Stop Leaks, Save Water."

The AWWA guide to "WATER CONSERVATION" is being sold at $2.00 per single copy, and $1.00 each for additional copies.

Prices for the mats for newspaper advertising, and for posters, leaflets, stickers, bill enclosures, as well as reprints of the newspaper ads. are quite reasonable. A supply of publicity and advertising material is immediately available from The American Water Works Association, 500 Fifth Ave., New York 18, N. Y.

[We understand that the press run on this guide was necessarily limited and orders are being taken by A.W.W.A. headquarters on the basis of "first come: first served"—Ed.]

OPERATING LOG FOR THE SMALL WATER PLANT

IN MOST states the department of health requires that monthly records of operating and analytical data be forwarded to the state office and forms are provided for that purpose. In cases where such forms are not provided or where the individual operator desires to keep his own record it may be desirable for the operator to develop a form. Herewith as a guide are three examples of forms used by three different state departments of health.

Concerning the need for and use of operating logs of this type, Charles R. Cox, Chief, Bureau of Water Supply, Division of Sanitation, N. Y. State Dept. of Health, says, "One is likely to neglect the maintenance of records unless their true significance is realized. Actually they represent a summary of work accomplished and of results secured, and, therefore, serve as a guide to future action as well as a proof as to the quality of water delivered in the past. Such records also furnish local and state departments of health with a summary of prevailing conditions for their guidance in the general supervision of public water supplies insofar as the health of the consumers is concerned.

"Actual experience has indicated that well maintained and complete records have enabled water supply officials to demonstrate to epidemiologists studying an outbreak of disease, which is suspected to be water-borne, that the operation of their plant was satisfactory and that water of safe sanitary quality was delivered during the period of onset of the disease. In the absence of such complete records, the scattered distribution of cases might implicate the water supply as being the obvious factor in that it is usually common to all of the cases. The importance of the situation is that evidence could not be confuted in the absence of records as proof of the satisfactory quality of the water delivered during the critical period *in the past.* Note the significance of the phrase 'in the past,' because no amount of analytical work during an epidemiological investigation can disclose the quality of water long since consumed in the municipality before the onset of the epidemic.

In our January issue an article appeared which presented a suggested Operating Log Form for Small Sewage Treatment Plants. As a result of this we received a number of requests from water works operators that we publish a similar form for the benefit of small water plant operators.

In response, we have secured forms recommended by former plant operators now connected with State Health Departments and a statement from each accompanies the forms supplied.

From Chas. R. Cox of the New York State Dept. of Health and Thomas R. Lathrop of the Ohio State Dept. of Health—both ex-operators—we have quoted parts of their statements in discussing log and record keeping and types of forms desirable. We are also indebted to Wm. R. Donner of the Illinois State Dept. of Health for his statement and forms supplied.

The Chief Value of Log Keeping and Records

"This more obvious value of records of past accomplishment, however, should not submerge the chief value of appropriate records for the guidance of the operators themselves. The mere recording of summarized information by an operator results in his own appraisal of his work, which otherwise might not be considered in such an abstract manner, and the maintenance of records encourages keener observation of operating conditions, frequently resulting in economies along with improved results. Records would be of limited value unless they are used as a basis of judgment and to stimulate keener observation. For example, the mere recording of water temperature in and of itself is of little value, but if the operator knows from past records that when water temperatures are below, say, 39° F., the entering water tends to stratify and flow along the bottom of coagulation

To New York State Department of Health:

Report on Operation of WATER PURIFICATION PLANT at ..... for Month of ..... 193.....

Date	Water Treated 1000 gallons	Filters		Wash Water		Alum	Lime	Soda Ash	Carbon	Ammonia	Chlorine				Temperature	Turbidity p. p. m.		Color p. p. m.		Odor	
											Pre.		Post.								
		Units in use	Units washed or scraped	Total 1000 gals.	Length of wash min.	Lbs. per day	Lbs. per day	Lbs. per day	Lbs. per day	Lbs. per day	Lbs. per day	Resid. Chlor.	Lbs. per day	Resid. Chlor.	Raw Water	Raw	Filt.	Raw	Filt.	Raw	Filt.
	1	2	3	4	5	6	7	8	9	12	13	14	15	16	17	18	19	20	21	22	23
1																					
2																					
3																					
30																					
31																					
Total																					
Aver.																					

48 REMARKS: Filters out of service; complaints (Nature, cause, remedy); Results of microscopic examinations; Etc.

	Date	
Sedimentation Basin last cleaned		
Clear water Basin last cleaned		
Storage Reservoir last cleaned		

— Fold Here —

Fig. 1. First Half of Monthly Operating Log and Report Sheet of the New York State Health Dept. (This half contains all data on plant operation and chemicals used, etc. Elsewhere in the form are columns for pH and total and coliform bacteria in raw, filtered and chlorinated water.)

Report of Operation to the Department of Health, State of Ohio, for Water Purification Plant at ____

DATE	WATER TREATED Thousands Gallons	FILTER OPERATION				CHEMICALS USED							CHEMICAL RESULTS IN PARTS PER MILLION																					
		Number Used	Filter Hours	Length Run	Number Washed	Gr. per Gallon			Parts per Million				Turbidity		Alkalinities						Hardness				pH		Color		Magnesium		Residual Chlorine			
						Alum	Lime	Soda	Carbon	Ammonia	Chlorine		Raw	Applied	Raw M.O.	Settled M.O.	Settled Phenol	Carbonated M.O.	Carbonated Phenol	Filtered M.O.	Filtered Phenol	Non-Carbonate Raw	Non-Carbonate Filt.	Total Raw	Total Filt.	Raw	Filt.	Raw	Filt.	Raw	Filt	Plant Tap	Distribution
1																																		
2																																		
3																																		
30																																		
31																																		
Totals																																		
Avg.																																		

Percent Wash Water Used During Month _____

Cost of Chemicals per Million Gallons _____

Month _____ Year _____

_____ Supt.

_____ Operator

Fig. 2. Form of the Ohio Dept. of Health for Water Plants. (Showing operating data, chemicals used, and analytical results.)

basins, thus leading to short circuiting and agitation of previously deposited sludge, the temperature observation becomes of paramount importance. In the same way previous temperature observations may indicate proper coagulation operations technique, or cold weather modifications in filter washing technique. These record blanks are not merely a collection of figures but are summaries of observations which are definitely related to experience and thus serve as guides to future action.

"The basic characteristic of the typical record blank should be the provision for recording three groups of observations: first, plant operating details; secondly, doses of various chemicals used, and thirdly, results of tests as to the character of the water being treated and of the final effluent produced.

Value of Operator's Diary

"The monthly record blank should be supplemented by a diary and the conventional bookkeeping records as to expenses incurred in the operation of a treatment plant. A simple diary is of fundamental value for recording intangible and frequently highly personal items which may be so obvious at the time that their future value may be overlooked. Such information, however, is soon forgotten or becomes sufficiently vague to be of little value unless brief informal notes can be consulted. Diary records are of special value when they indicate procedures followed in solving unusual problems.

"In summary, a habit of mind should be cultivated of viewing the readings of meters, gauges and other instruments and also the results of laboratory tests as visible evidence of what otherwise is not apparent to the operator and for such observations to be recorded for convenience in appraising their joint significance and to serve as a guide for the future."

Patterns of Record and Log Forms

The New York State form is made to fold in the middle to produce a file size of 8½ by 11 inches. In Fig. 1 is shown half of this form covering mainly plant operating data, chemicals used, and some analytical results. The other half of the form (which we regret could not be reproduced because of space limits) contains columns for recording pH, total bacteria and coliform bacteria in the raw, filtered and chlorinated water. On the back of the form are spaces for additional analytical data collected during the month to show the character of water delivered to the consumer or to give more information concerning unusual conditions at the plant. Items included are turbidity, color, odor, hardness, alkalinity, iron, manganese, chlorides, residual chlorine, dissolved oxygen, and oxygen consumed.

Fig. 2 shows a similar form used in the state of Ohio. This form contains more analytical data and fewer entries of plant operating data and chemicals used. This form is augmented by a second, on which is entered all of the bacteriological test data. The Ohio Department of Health also has a third form used only for zeolite water softening

TO: DIVISION OF SANITARY ENGINEERING, STATE DEPARTMENT OF PUBLIC HEALTH, SPRINGFIELD, ILLINOIS.

BACTERIOLOGICAL REPORT ON WATER SUPPLY OF _____ FOR MONTH OF _____ 194____

DAY	BACTERIA per cc. (Agar at 37° C.)					COLI-AEROGENES																												
						RAW (24 hr. Presump. or conf.)					FILTERED 10 cc.			PLANT — FINISHED								DISTRIBUTION — SYSTEM												
														50 cc.			10 cc.					50 cc.				10 cc.							
											Presumptive			Presumptive			Presumptive					Presumptive				Presumptive							
	Raw 50	Appl. 51	Filt. 52	Finished 53	Tap 54	10 cc. 55	1 cc. 56	0.1 57	0.01 58	0.001 59	24 hrs. 61	48 hrs. 62	Part Cond. 63	24 hrs. 64	48 hrs. 65	Cond. 66	24 hrs. 67	48 hrs. 68	Cond. 69			24 hrs. 70	48 hrs. 71	Cond. 72		24 hrs. 73	48 hrs. 74	Cond. 75					
1																																		
2																																		
3																																		
30																																		
31																																		
BACTERIA AVE.																																		
MAX.																																		
MIN.																																		

FOR ADDITIONAL REMARKS USE REVERSE SIDE _____

REPORT BY _____ (TITLE) _____

Fig. 3. Form of the Illinois Dept. of Health for Recording and Reporting Bacteriological Results. (Other Illinois forms are similar to those of New York and Ohio)

plants. The general idea of this latter form is a combination of the other two with only columns pertinent to water softening included.

Concerning these forms, Thomas R. Lathrop, Assistant Engineer of the Ohio State Department of Health, writes, "Some of the larger plants keep more complete data on operation in their own files. For smaller plants, however, the data covered by these forms are sufficiently comprehensive. Sometimes it is necessary to change column headings to fit special conditions. All forms are 8½ by 11 inches, which is good filing size. Operating log forms are not a fixed standard and often find need of revision at intervals, perhaps to add a new test or delete an old one. Climatological and water temperature data should be included at every plant. Not many plants use all of the columns provided on the Ohio forms, and hence by change of heading may add some test or observation not included."

Fig. 3 shows a typical bacteriological data log and report sheet as used by the Illinois Department of Health. In addition to this form there are three other forms of the same size (9¼ by 14½ inches), and these forms record data similar to that given in Figs. 1 and 2 (the New York and Ohio forms).

About these Illinois forms, William J. Downer, Acting Chief Sanitary Engineer of the Illinois State Department of Health, writes, "The form containing the plant operating, chemical operating and analytical data is used for surface water supplies having conventional treatment and for lime-soda water softening regardless of whether a ground or a surface supply. Another similar form, with slightly different entries, is used for ground water supplies when iron removal, zeolite softening or a combination of the two is involved. Another form records information on well supply plants that have no treatment but chlorination. It was designed chiefly for use in State institutions but has found favor in several public water supply plants. On it are recorded hourly residual chlorine determinations daily, weight of chlorine cylinder, and amount of chlorine used each day as well as volume of water treated each day."

In General

In the preparation of any form, certain ideas and factors should be borne in mind. Size of sheet and ease of filing for ready reference, columnar headings only for items requiring regular entry, provision of an extra blank column or two for miscellaneous data or results, and a column for remarks. (The latter were trimmed out in the accompanying cuts in order to preclude too great a reduction and to conserve space.) Provisions for all data and entries which may properly be included under the three categories of data, set up above, should be made. The columnar headings should be self-explanatory and separated by vertical lines of varying weight to segregate related data into sections. Other general ideas expressed by Prof. Hirsch on a log for a sewage plant, which appeared in the January, 1943, issue of WATER WORKS AND SEWERAGE, have been adapted to forms for a small water plant. Prof. Hirsch's suggestions follow.

OPERATION REPORT SHEET FOR A SMALL WATER PURIFICATION PLANT

By A. A. HIRSCH, Director
Sectional School on Water Supply*
and Sewerage
BATON ROUGE, LA.

Recently a streamlined, but complete, form of operating report for a small Imhoff type sewage treatment plant was submitted in these columns.[1] A companion record sheet for a small water purification plant, serving a population up to about 15,000, has since been arranged and is shown in the accompanying figure.

As in its predecessor, this summary aims to delete all columns and data which are valueless or repetitious. The operator does not record the time of day for taking routine samples, since the hour is fixed in his daily schedule of tasks, usually just after completing a round of inspection. If desired, this time may be printed in small type as a footnote. Any extra tests, at another hour, may be mentioned in the remarks column or on the reverse side of the sheet; such entries are relatively rare except during an emergency. Air temperature is omitted because a single reading of the thermometer at 8 or 9 A.M. may differ decidedly from the lowest daily temperature or from the average daily temperature. Any special weather phenomena bearing on plant operation should be cited in the remarks. Likewise eliminated from the record is the carbon dioxide test. The accompanying tests for pH and total alkalinity determine the value of carbon dioxide by fundamental theory, hence no point is gained by carrying out this specific test, especially considering the erroneous results commonly obtained with titrimetric methods in CO_2 determinations. The total 24 hour count on agar at 37° C. has been omitted because this test has no clear cut bearing on water quality and it usually reveals nothing of significance not indicated in the standard test for coliform organisms.

Plant Individualities Recognized

This form of daily record and monthly summary is merely suggestive; each plant has its own individual features to which the record sheet should be tailored. Some units may require detailed records for their own operation. Thus in a sludge blanket type of coagulating tank, a special record is advantageous on which to write sludge levels, sludge concentrations and operating attention. Obviously such details, even though vital for proper performance, do not have sufficient general interest to be included ordinarily in a monthly summary. Similarly more detailed sheets for hourly entry may be in order for individual filter units, pumps or chlorinator according to the character of the plant. Likewise in some plants more sampling points are desirable to show progress of coagulation or softening after mixing or flocculation. Any change in important untabulated detail should be noted in the remarks column.

The sheet described below is intended mainly for plant reference and for furnishing monthly operating data to the State Health Department. Analytical data include tests on river, settled and filter waters; also summarized are the pumpage, chemicals consumed and filter performance.

*State Department of Education.

Description

The river stage is included because of its relation to water quality and its hydrological interest. Water temperature affects the speed of chemical reactions and physical processes; its influence is universally appreciated and hence it should appear as an important variable in the record. Since the bulk of the water is so massive, its temperature is practically unifrom throughout treatment. The usual tests are provided for: turbidity, pH, total alkalinity, hardness, chloride and color or odor, as the case demands. A blank column allows space for any special series of tests. Only a few determinations are made on settled water, as indicated. As with river water, a complete set of tests is made on filtered water, with added determinations of (a) phenolphthalein alkalinity, on account of its importance and the limitation set by the 15+0.4 total alkalinity rule in the 1942 revision of U. S. Public Health Standards[2]; (b) residual chlorine,—(the sampling point and average contact time should be mentioned as a footnote); and (c) presence of coliform bacteria.

The Important Coliform Test

The test for the coliform group, reduced to its simplest form, is a single 100 ml. fermentation, conducted in the bacterial sample bottle without transfer, which shows at once if the water is satisfactory or sub-standard. A lone 100 ml. portion is considered to be more revealing than the usual five 10 ml. portions, at the customary finished water coliform level; it also greatly simplifies manipulations, speeds the test whenever transportation is involved and economizes use of media to below the amount required for the standard optional five 100 ml. inoculations. The presumptive results are noted simply by a plus or minus sign. If the tests are confirmed in Brilliant Green Bile Broth their outcome can be indicated by the signs C+ to show confirmation and (+) to denote failure to confirm. A negative fermentation may be marked (—) to distinguish from a bare dash which might be construed as an omitted test. The U. S. P. H. S. standards limit the monthly frequency of confirmed positives to 60 per cent in such a series of 100 ml. portions.

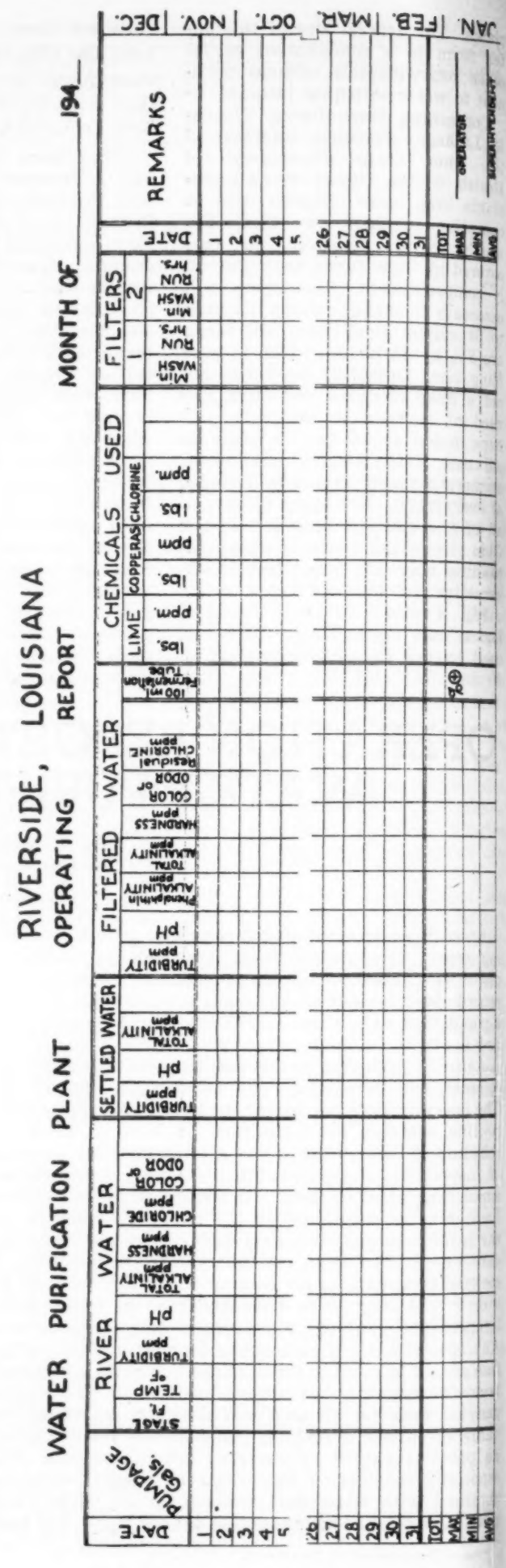
Chemicals and Filter Data

The chemicals consumed are recorded in pounds and in parts per million. The latter unit is adopted because it allows direct comparison with the analytical tests which are also stated in the same unit.

Filter operation data is confined to the length of time that the wash water pump is in operation and the number of hours each day a particular filter delivers in service. These daily periods, written as small super-numerals, are summed up to give the total length of filter run, which is written in large figures and is averaged at the end of the month. A printed footnote should state the delivery rate of the wash water pump under an average backwash head.

A liberal width for the remarks column is allowed for the recording of unusual items. Another date column facilitates location of items on full sheets. A heavy cross line, after each fifth day, serves the same purpose.

The line of month names at the extreme right margin is an indexing feature. Every future month in the year is cut off from this strip thereby exposing the name of the current month to enable thumb selection without turning pages.



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(1) A. A. Hirsch, "Operating Log for a Small Sewage Plant." Water Works and Sewerage 90, 28-9 (Jan. 1943).
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4-STATES SECTION & PA. WATER WORKS' OPERATORS MEET IN PHILADELPHIA

Fuller Award to L. L. Hedgepeth

A Report by

GEORGE E. SYMONS
Assoc. Editor

PHILADELPHIA, the Cradle or Trundle Bed of Liberty, was host to the Annual Conference of the Four States Section, AWWA, in cooperation with the Pennsylvania

Chairmen

Incoming	Outgoing
W. R. Schnabel Supt. & Engr. Allentown Bur. Water Allentown, Pa.	*J. G. Patrick Chemist W. Va. Pulp & Paper Co. Luke, Md.*

Water Works Operators Association on Oct. 14-16.

Acting as official welcomer for the city was Martin J. McLaughlin, Chief Engr. of the Philadelphia Water Bureau, which under the sponsorship of Mr. McLaughlin and his Prin. Asst. Engr., Joe E. Gill, also presented a very unique and interesting display of the diagrams of the water plants and the relief maps of the systems. (See *Water Works and Sewerage*, October issue, for a description of these maps.)

Attendance at this meeting was gratifying to the program committee, the officers, and the speakers. At the annual get-together on the opening night, 151 registered (compared to 80 a year ago).

Business Meeting

After the secretary-treasurer had reported the section's sound financial status and an increase in membership, Mr. Harry Hall announced the slate of officers who were unanimously elected as follows:

Chairman—W. R. Schnabel, Supt. Water, Allentown, Pa.

Vice Chairman—R. C. Beckett, State San. Engr., Dover, Del.

Trustee—Geo. L. Hall, Chief Engr., Md. Bd. Health, Baltimore, Md.

Trustee—Maj. E. C. Radcliffe, Elizabethtown, N. J.

Secy.-Treas.—H. Lloyd Nelson, U. S. Cast Iron Pipe Co., Philadelphia.

Fuller Award to Hedgepeth

The citation for the Fuller Award of the Four States Section for this year read, "To one who for years has contributed continuous research in the purification of water supplies, which knowledge he has so willingly

Hosts

M. J. McLaughlin Chief Engineer Philadelphia Bur. of Water, Phila. (Programmer)	*H. Lloyd Nelson Eastern Mgr. U. S. Pipe & Fdy. Co., Philadelphia (Re-elected Secy.)*

contributed to not only the members of this association but also to others throughout the United States; to the furtherance of safety measures in the use of these same chemicals; and finally to the continuing efforts which he has given to this association from which we have all profited, now is awarded the highest honor available to any member of this section, the George W. Fuller Award, to Mr. L. L. Hedgepeth, Manager of the Technical Service Division of the Pennsylvania Salt Co."

Water and Civilization

M'Kean Maffitt, Supt. of Water and Sewerage, Wilmington, N. C., and author of the famous outpourings concerning the miseries of priorities in an A. W. W. A. Journal article, "A Superintendent's Nightmare," was the featured luncheon speaker. Introduced by George Norcom, Mr. Maffitt carefully explained that Mecklenburg County, N. Carolina, was the real cradle of liberty and Philadelphia merely the trundle bed, but that Mecklenburg County had lacked proper "press-agentry." Dipping now into philosophy, now into humor and poetry, and again into the Scriptures, Mr. Maffitt traced for his listeners a picture of the place of water in civilization and the place of the water superintendent in modern life. To the latter, the speaker's words were not only a tonic but also a salute. [It is hoped that Maffitt's speech can be printed in full in a later issue.—Ed.]

Incodel

James H. Allen, Chief Engr. of the Interstate Commission on the Delaware River Basin (INCODEL), gave an enlightening talk on the matter of home rule and the way in which the people of the Delaware River basin are trying to develop a home rule program unfettered by encroachment by federal bureaucracies on democratic principles. Created in 1936 and consisting of five men from each of the four states concerned, the purpose of the commission is to

Post-War Symposium

Abel Wolman Prof. San. Engr. Johns Hopkins Baltimore, Md.	*C. J. Bruce Supt. Evitts Ck. Wat. Co. Cumberland, Md.*

develop and coordinate the work on the Delaware River.

Activities of the INCODEL have included opposing stream pollution control by the federal government; adoption of stream pollution standards by the Chief Sanitary Engineers of the four states; survey of

the possibility of hydroelectric power and establishment of the fact that such development has no merit; consideration of a proposed New Jersey ship canal and the determination that its construction would cause deterioration of water supplies totalling 150 m.g.d.

Manpower Symposium

Rennie I. Dodd
Exec. Mgr.
Mun. Water Auth.
Chester, Pa.

R. J. Stewart
Service Division
Edgewood Arsenal

Fluorine in Drinking Water

A synopsis of the Fluoride Panel Discussion at the Cleveland 1943 AWWA Meeting was presented by Harry Faber of the Chlorine Institute. This panel discussion was reported by Mr. Faber in the August issue of *Water Works and Sewerage.*

We Prepare for Peace

Led by Prof. Abel Wolman, fresh from his radio appearance on "Town Hall Meeting of the Air," and sparked by George Whitwell, C. J. Spruce and Harold Hutton, the subject of post-war planning for the water utilities was given thorough consideration.

No one doubts that the first job is to win the war, but job 1-A is to prepare for the day when soldiers will be returning and workers shifting, according to Dr. Wolman. Some of the other statements made by the past President of AWWA bear repeating: "To look ahead is horsesense. We don't live in a universe that can be independent of private enterprise. Water is life and it is obvious why we must stress water supply; sewage treatment needs are more subtle. Sanitation is the underpinning of life. Programs are just a piece of paper, and there is no way within the horizon of preparation of post-war planning to allay the fear that planning may dissipate in speech making. The real job is to watch that we do not fool ourselves and do not fool the public, and to get slow motion into actuality. It is time to move from the period of gestation to that of birth, to hire consulting engineers, to make money available. All this may be summed up as: Aid the war, avoid waste, study individual problems, and get down to brass tacks quickly."

Wherein Philadelphia has already followed Dr. Wolman's precepts was described by George E. Whitewell, Pres. of the Philadelphia Chamber of Commerce, who said that in the study of community problems in Philadelphia, the following were ideas with which they were concerned:

Balance the budget and relieve excessive taxes; participation in Federal funds for construction must depend on the conditions attached; bring works to the blueprint stage and make money available; clean up the Schuylkill River, treat the sewage, eliminate blighted areas, and develop Philadelphia as a port.

Charles J. Bruce, Water Supt. of Cumberland, Md., told how a medium size community has put on its thinking cap and hired a consulting engineering firm to prepare a report covering the subjects of water supply, sewerage, streets and highways, buildings, recreation, housing, power and utilities, and municipal finances among other items.

Fuller Award

L. L. Hedgepeth
Mgr. Tech. Service
Penn Salt Co.
Philadelphia

Lunch'n Speaker

M'Kean Maffitt
Supt. Water and
Sewage Dept.
Wilmington, N. C.

"Industry Is Also Looking Ahead," according to Harold S. Hutton, Sales Mgr., Wallace and Tiernan Co., because industry realizes that after the war there will be necessary a high level of employment. How to accomplish the job is being studied through a post-war committee in almost every industry, looking toward improvement in present products, plans for sales of new products, and reorganization of production.

Everyone knows that research is depleted now or engaged in war production, and post-war product improvement may have to wait, but production reorganization is being planned now. Some war developments will have peace time application but many will not, and industry undoubtedly will be caught with a great backlog of unfilled war orders.

Industry is conscious of these problems and is working on their solution.

Manpower for Our Water Supplies

A. M. Boyd, Asst. Mgr., Personnel Dept., Philadelphia Electric Co., introduced the discussion with comments on the overall view. Rennie Dodd, Exec. Mgr., Chester Municipal Water Auth., pointed out that one of the difficulties in municipal water plants was that there was no social security but that advertising permanent jobs had had generally good results. The manpower freeze has not helped the water companies as much as expected, but draft deferment by local boards has generally been granted at least to key employes.

C. J. Alfke, Exec. V. P. of the Hackensack Water Co., presented the views of the privately owned water plant, commenting on the fact that these water plants contained all the elements of business—manpower, money, machines, materials and methods. The Hackensack Water Co. has been unionized and to handle the problems the company now has a central personnel office. "It is good business," said Mr. Alfke, "to keep employes informed, be honest with them, and don't try to kid them."

"Women operators" are OK, according to R. J. Stewart of Edgewood Arsenal. This plant now has women operators working in the filter plant, in the laboratories, and has had them working in the boiler room. They act sanely in emergencies, perform their work well and keep the plant clean. Fortunately, perhaps, Mr. Stewart had some 600 women from whom to pick his operators, and these women had all been working in the arsenal in other mechanical or semi-mechanical jobs.

Stop Waste

Harry R. Hall
Chief Engineer
Wash. San. Dist.
Hyattsville, Md.

Lewis B. Miller
Chem. Engr.
W. H. & L. D. Betz
Co., Philadelphia

"Scanning the Problem Nationally," Mr. L. B. F. Raycroft, formerly

(1) (2) (3) (4) (5) (6)

Among Those Present

(1) *Al Brumley, Stuart-Brumley Corp., Baltimore*

(2) *Joe E. Gill, Prin. Asst. Engr., Philadelphia Bureau Water*

(3) *George Hall, Chief, Bur. San. Engr. Maryland Dept. Health*

(4) *L. D. Matter, Penn. Supt. Dept. Health, Harrisburg, Pa.*

(5) *A. M. Tawney, Supt. Water & Sewage, Fort Mead, Md.*

(6) *Marcus Tark, Link-Belt Co., Philadelphia, Pa.*

of WMC, said that regimented labor was not possible, but there is a shortage of labor now what with 11 million in the armed services. In all, some 28 million persons have been drawn into the war industries and 65 million are now employed.

The Revised USPHS Drinking Water Standards

(Reported by Harry Faber, Res. Chem., The Chlorine Institute.)

These new standards represent 18 years of practical experience and their shortcomings will become apparent only with use. Thus was the

Official Family

Northampton Borough Municipal Authority, Northampton, Pa.
(Eight of nine attending)

subject introduced by Arthur P. Miller, Sr. San. Engr., USPHS. Mr. Miller briefly outlined the history of the standards, recounting that early in 1941 the Surgeon General appointed the committee to review and revise the 1925 standards. The new standards were adopted in September, 1942.

The major revisions include the direction of attention to cross connections and health hazards, the requirement of more frequent sampling, the examination of larger quantities of sample, and the adjustment of chemical requirements.

Speaking from "The Operator's Viewpoint," K. C. Armstrong, Filt. Supt. of the Chester Mun. Water Auth., said that the standards of clarity are well within practical limits. Improved coagulation can be greatly affected by flash mixing, with concurrent elimination of filter troubles. Chlorine dosage should not be determined by the cost. The O-T test is the operators' standby; bacterial tests are best, although too late.

There should be little trouble in meeting the standards where the system is provided with covered reservoirs, otherwise there may be trouble. Discouraging results are obtained with reservoirs having the inlet and outlet in the same line.

Mr. G. A. Elias read the paper by George Hall of the Md. Dept. of Health on "The Reporting Agency and the New Standards." Most laboratories are not equipped to change to 100 ml. portions, equipment or containers for sampling.

The central and ten branch laboratories in the Md. Health Dept. will require time to provide for larger portions. Field men now collect from ten to twenty samples a day, and at least monthly samples must be collected from the taps from each of 200 municipalities, but this will not be possible with the same laboratory staff under the new standards. Mr. Hall recommends continued cooperative research to make any necessary changes in the new standards.

Prioritus

Regarding the occupational disease of wartime executives, H. Lloyd Nelson told of the new changes and new orders issued by the Water Utilities Branch of OWU whereby the difficulties formerly experienced have been largely removed.

Nelson has traveled to many states and meetings recently and finds the feeling towards WPB improved but most persons hope that WPB will leave things as they are.

Stop Waste Program

As an introduction to the water conservation program, Mr. Nelson showed several posters and told of the new book issued by the AWWA.

In Philadelphia Mr. McLaughlin, Chief Engineer, said that a cooperative program was instituted in and around Philadelphia. Consumption had been greatly increased because of war industries. Four-page leaflets and posters distributed stressed the patriotic duty. No coercion was used. The results were satisfactory.

Harry Hall told "How the Washington Suburban Sanitary District Persuaded Its Consumers to Reduce Water Consumption." An increase of 28.5 per cent in population was caused by the world's greatest boomtown, Washington, and the mad rush for federal jobs in the past three years. A publicity campaign, both

The Glace Family

Harrisburg, Pa.

by circulars and by newspapers, was generally successful in keeping the peak demands down during the summer months and consumers' cooperation was attested by the burnt lawns.

"Practical Means of Effecting Reduced Consumption by Large Industrial Users" were explained by Dr. Lewis B. Miller, Chem. Engr. of W. H. and L. D. Betz Co., Philadelphia. Replacement of once through cooling systems by recirculating systems will effect substantial saving. Prevention of scale forming in cooling systems will reduce water consumption.

Morris L. Hicks of the Dravo Corp., Philadelphia, said, "Look after your pumps; they are the real power users in a water supply system." Power takes fuel, therefore, any saving in slippage or leakage in pumps is a saving in power. Off-peak pumping is recommended to reduce power consumption. Mr. Hicks made a number of other recommendations concerning the conservation of power by attention to pumping efficiencies.

NEWWA ANNUAL MEETING AND WARTIME CONFERENCE

(Second and Concluding Installment)

Part I of this report, covering the 1943 *Annual Meeting and Wartime Conference of the New England Water Works Association in Boston, Mass., on September* 28*th and* 29*th, appeared in our October issue.*

Wartime restrictions, limiting the use of paper in magazine production, prevented printing of the full report in a single issue without pushing from the schedule other planned, and already delayed, material. On this account we held over this portion of the New England report, which is here presented as the second and concluding installment.

FLOWS IN DISTRIBUTION SYSTEMS

(Predictable through Use of Electrical Models)

Referring to all existing methods of determining the flow in distribution systems as trial and error methods, Prof. T. R. Camp, of M.I.T., proceeded to explain why the Hardy Cross Method, the Freeman Graphical Method, and others, lead to considerable error, and are inadequate for large municipalities.

(1) *Rollo K. Blanchard, V.P., Neptune Meter Co., New York*

(2) *Wm. P. Melley, Supt., Milton, Mass.*

(3) *W. Guy Classon, Supt., Water and Sewerage, Mass. Leominster, Mass.*

(4) *Thos. L. Halpin, A. P. Smith Co., E. Orange, N. J.*

(5) *Wm. Jas. Caird Marshall, Supt., Georgetown, Mass.*

Where the number of loops is large, skeletonizing gives errors which cannot be evaluated, and yet it is important to select economic pipe sizes in replacements, or new construction. Such selection has not been done because hydraulic analysis is the bottleneck. There are too many unknowns, and the amount of mathematical calculations in arriving at a solution is far too great to be feasible. For example, one loop and a crossover requires eleven equations to solve, and these often are based on incorrect assumptions.

By means of slides of equations, diagrams, and equipment, Prof. Camp showed why he believed that only actual models, either hydraulic or electrical, will produce the true and correct answer. Simplest is the vacuum tube model, wherein only three tubes are required for each element of the system. Hydraulic models entail more difficulty in reproducing exact hydraulic characteristics. Prof. Camp argued that while the cost of models is relatively high, such a model will be well worth while, and economically justifiable, if a five per cent savings in replacement costs is obtained.

(1) *E. M. ("Casey") Jones, Simplex Valve, Phila., Pa.*

(2) *Harry H. Angell, Asst. Supt., Westfield, Mass.*

(3) *Francis L. Hatch, Superintendent, Water District, Kittery, Me.*

(4) *Wm. Naylor, Supt., Maynard, Mass.*

(5) *Geo. C. Brehm, Supt., Amherst, Mass.*

Water for Air Raid Fires

Horatio L. Bond, Chief Engineer of the National Fire Protection Association, told of his trip to England, and his observations there on water supply for fire fighting. Whereas London's buildings are similar to ours, houses are not. This latter fact, together with the high humidity, has prevented the large conflagrations that have been experienced in America. Consequently, there has been no special emphasis on water supply fire protection, but with the bombing has come auxiliary tank and reservoir supplies. Mr. Bond recommends separate water systems for fire fighting, local reservoirs, and sprinkler systems as protection against fires from bombings in future wars, if not in this one. To date, few, possibly no, water plants have been hit in England, and Mr. Bond doesn't believe there is much likelihood that there will be much damage. Apparently, precision bombing, claimed by American bombers, is not known to the enemy.

Motion Pictures

Through the courtesy of The Barrett Division, Allied Chemical and

Dye Corp., a sound motion picture in color, titled "Oil for War", was shown of the construction by War Emergency Pipelines, Inc., of "Big Inch". Twenty-four inches in diameter, and 1500 miles long, the pipeline will hold 4,000,000 barrels of oil, which will be pumped through the line at the rate of 108 miles per day, delivering 300,000 barrels daily to the Eastern Seaboard. Twenty-six pumping stations will keep the oil moving under a pressure of 725 psi for the fourteen days required for the oil to move from Longview, Texas, to the East coast.

Constructed at the rate of more than 6 miles a day, Big Inch is covered with coal tar enamel, and asbestos felt for protection from corrosion, and buried four feet in the ground. Crossing under thirty rivers and 200 smaller streams, the pipe is welded throughout from forty-foot lengths weighing approximately two tons each.

To emphasize the importance of oil to the war, the picture also contained some actual shots of combat action at Midway, both in the air and on the sea.

Another sound motion picture presented "Emergency Chlorination Methods." This picture was prepared in connection with Emergency Water Service Training Schools, under New York State Mutual Aid Plan for Water Service, and was shown through the courtesy of the New York Dept. of Health. The introductory remarks were made by Earl Devendorf, Director of the N. Y. Mutual Aid Plan. Alan Johnstone, of Wallace & Tiernan Co., gave the lecture on equipment for chlorination, and demonstrated various means of emergency chlorination. The demonstrations took place on the banks of the Niagara River, where Alan Drake, Director of Water for Buffalo, had made available all the necessary equipment for the "Auxiliary Water Operators' Training School" held in July, 1942. The pictures of the outdoor demonstrations, which this writer witnessed, were excellent, but the early parts of the film suffered materially from poor lighting and printing.

Symposium on Post War Activities

As Chairman of the NEWWA Post War Planning Committee, E. Sherman Chase reported as follows:

"In view of the formation of the national committee, your committee has held in abeyance its own activities during the summer in order to learn the policies of the national committee and the manner in which its own activities could be correlated therewith. In this connection you will note from the appended bulletin that the national committee plans the formation of state committees throughout the country. An exception is made in the case of the New England area, where it is proposed that 'the existing committee of the N.E.W.W.A. and the N.E.S.W.A. can function for all six New England states, probably expanding their present membership somewhat and possibly forming state subcommittees through state water works and sewage works associations.'

"In view of the foregoing developments which have taken place since the presentation of the Progress Report of your Committee, it would seem advisable for the committees of this Association and that of the New England Sewage Works Association to form a joint committee for the purpose of representing in New England the national Committee on Water and Sewage Works Development. Furthermore, it seems advisable to reorganize and expand this joint committee somewhat in order that it may function efficiently to produce the most good. In this connection it would be well to provide on the committee membership for the state sanitary engineers, ex officio, of each of the New England states. Such a step will be taken if the New England Water Works Association authorizes its committee to act jointly with the committee of the New England Sewage Works Association. Such cooperation was authorized on September 22 by the latter association.

Following Mr. Chase's report, Warren Scott, of the Conn. Dept. of Health, presented a resolution calling for the integration of the NEWWA Committee into a Joint Committee on Water and Sewage Development with the New England Sewage Works Association. The resolution was passed.

E. L. Filby, Field Director of the Committee on Water and Sewage Works Development, spoke on activities of that Committee. Pointing out that the Water and Sewage Works Operators and Utilities must take the lead in post war developments, Mr. Filby quoted the following paragraphs from the Committee's first release to show the plans and intentions of the Committee.

"Believing that adequate water supply and intelligent waste collection and disposal are within the reach of every city, the committee on 'Water and Sewage Works Development' plans to stimulate the following activities to the cities of North America:

1. An appraisal of the needs for water and sewage works improvement or construction.
2. The development of orderly programs for meeting these needs in the order related to their value to the city or the region.
3. The preparation of detailed plans and specifications for the needs of first importance as soon as arrangements can be made.
4. Consideration of, and development of methods for funding the necessary construction.
5. Reappraisal of authority under which the contemplated projects can be carried on as well as the legal basis for funding such operations. (Promotion of legislation whenever needed.)
6. Definite scheduling of the con-

Alan Darby
The Dorr Co.
New York

Phil Holton, Jr.
Supt.
Providence, R. I.

Michael Quirk
Distrib. Supt.
Peabody, Mass.

Roger Oakman
Supt.
Needham, Mass.

Fred Almquist
Conn. Dept. Health
Hartford, Conn.

E. H. Lewis
Tate Linings, Inc.
Andover, Mass.

J. W. Reilly
Supt.
Ware, Mass.

struction program. (Immediate purchase of land and rights of way if part of the projects.)

"We find ourselves in profound disagreement with the idea that 'Public works are recognized as necessary *in a way.*' The kind of public works we are talking about are necessary, *all the way,* in a well balanced city or region. They are at the same time a part of industry and a complement to it.

"What route would economic development take without a modern sanitary environment for the factories and their workers? What could civic development be if it failed to recognize the need of a city for a safe water supply and clean streams? The U. S. Chamber of Commerce takes a most progressive attitude in its 'Plan Now for Future Public Works' where it tells its citizen members to 'call on your city, county or state engineers.'

"We do not believe that we have to wait for federal aid either for the planning or for the execution of useful public works. . . . we feel that waiting for federal aid can only breed the necessity of having it; while forthright planning and execution of public works will restore the true responsibility that every city has for putting its affairs in order. . . . "

Public Works After the War

Miss Elizabeth M. Herlihy, Chairman of the Massachusetts Planning Commission, spoke on the problems confronting us after the war, demobilization, release of youngsters, oldsters, women from war industries, and technological unemployment.

Massachusetts has a committee on Emergency Public Works, and $700,000 to spend for plans equivalent to $17,000,000 worth of construction. This committee is cooperating with the Planning Commission, Post War Readjustment Commission, etc., to have all cities form planning committees. Without previously realizing it, this idea fits well into the "Blueprint Now" plan of the Committee on Water and Sewage Works Development.

Regarding financing, Miss Herlihy favors cities expecting help from the Lord only when they have helped themselves, and regarding the time for post war planning she quoted another who said "Good intentions for post war planning build no buildings and pave but one well known road."

Committee for Economic Development

Dudley Harmon, Executive Vice President, New England Council, and Regional Vice Chairman of the Committee for Economic Development, was emphatic in his statement that employment is the keyword for all post war plans, and pointed out that prolonged mass unemployment leads to dictators, or to governmental control of private life.

The Committee for Economic Development expects considerable post war planning in states, but finds plans in cities and towns are not developed at present. Perhaps "Blueprint Now" will help. Perhaps, too, the C.E.D. will help if it helps industry to plan to absorb employables after the war.

The Committee is composed of two parts; research and field divisions. The former is studying means of utilizing employables in post war industry. The field division is trying to establish local committees of industrialists throughout the land. At present there are over 200 groups, 54 in New England alone. Stimulating business to do its own planning is the aim of C.E.D. No lobbying is being done for the research division ideas.

"Herb" Crowell
Rensselaer Valve
and
Arthur C. King
Supt.
Taunton, Mass.

Thos. L. Cate
Supt.
Laconia, N. Y.
and
R. C. Beale
% Proportioneers %
Nashua, N. H.

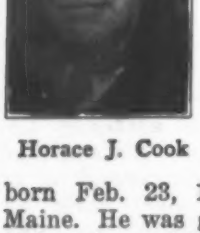
Jerry McCarthy
Monsanto
Arthur Akers
Public Works Mag.
Fred Stuart, Baltimore
Frank Burr, Monsanto

Wayne Kivell
and
Alan Darby
The Dorr Co.
New York

"Ed" L. Tracy
State Dept. Health
Burlington, Vt.
and
Major Howard Potter
U.S.P.H.S., Augusta, Me.

Horace J. Cook Passes

A Name to Live On in Water Works Associations



Horace J. Cook

Horace J. Cook, Superintendent of the Water and Sewer Districts of Auburn, Maine, passed away on October 18, 1943, the victim of a heart attack. He was 56 years old.

Mr. Cook was born Feb. 23, 1887, in Burnham, Maine. He was graduated from the University of Maine in the class of 1910. While in the university he was an all-round athlete, winning thirteen letters in various sports. In 1909, as a Junior, he was captain of the varsity football and track teams. He was a member of the Alpha Tau Omega Fraternity.

After graduation he became an evaluation engineer for the N. Y. Central and Atlantic Coast Line Railroads. Shortly before World War I he became Assistant Superintendent of the Kennebec, Me., Water District, which position he left for war service as Captain in the U. S. Army and was placed in charge of utilities at Camp Cady, New Mexico.

In 1919 he moved to Auburn, Me., and in 1920 became Auburn's City Manager. Upon establishment of the Auburn Water and Sewage Districts in 1922 he was appointed Superintendent, which position he held up to his death. In this 21 year tenure he became one of Auburn's No. 1 citizens, where he was an ardent Mason and Shrine member and community leader in several directions.

Horace Cook was one of the founders and most active members of the Maine Water Utilities Association, having missed but one out of the 109 meetings held by the association. No single member had been more active in its affairs, he having served as Secretary-Treasurer and Editor of the Association's Journal from 1925 until 1932, when two members were named to take over his two-man job. At the time of his death he was serving as Chairman of the Cross Connections Committee and the highly important and active Defense Committee, which organized the Mutual Aid Plan and Central Inventory for Maine Water Utilities as a pioneering activity.

NEW YORK SECTION AWWA FALL WAR CONFERENCE

A Report by

GEORGE E. SYMONS

Associate Editor

HEADLINED by Samuel Morris, Pres., AWWA; E. L. Filby, Field Director, Committee on Water and Sewage Works Development; Paul Valle, Administrator of Order U-1; Lloyd Nelson, Water Div., OWU, and featuring papers by Earl Devendorf, Bob Wheeler, E. J. Rowe and Francis Hallinan, the New York Section held its fall War Conference in Binghamton, N. Y., Sept. 30-Oct. 1.

Secretary
Rollo K. Blanchard
Neptune Meter Co.
New York City

Host
Simon P. Carman
Engineer, Bureau Water
Binghamton, N. Y.

Speaking at the banquet, Dean Morris reviewed the size, finances, growth, and purpose of the AWWA and commented on the importance of the Journal and the excellent and helpful work of Harry Jordan to its members in the past several years. With reference to post war planning and the activity of AWWA in connection with the work of the Committee on Water and Sewage Works Development, President Morris said, "The world did not start yesterday; neither will it stand still tomorrow. . . . Just as the road of progress in international affairs is not a one way street, so too is the road of progress in water purification development."

Administration of Order U-1

"Maintenance and Repair of Water Utilities During the War Emergency" were discussed by Vaul Valle, Administrator of Order U-1, Office of War Utilities, Washington. Mr. Valle pointed out that Order U-1 permitted capital additions under certain limitations. Before making these capital additions, the Order asks three questions, and if the answer is yes to each one, the additions may be made. The first question is, "Is the job essential or necessary?" If water is available, even though at limited pressure, the job is not essential. The second question asks whether the job has been planned properly to save strategic and critical materials; and the third question, in effect, asks the operator if he has "patched and prayed." If the answers to these three questions is yes, the capital addition may be made.

Mr. Valle commented on the quantitative restrictions of Order U-1 and referred the listeners to paragraphs F-1 and F-3, noting that the schedule of withdrawals is now based on a yearly quantity, rather than on a quarterly quantity. Mentioning, too, that the most recent change in U-1F was effective that day, Mr. Valle discussed the reason for many of these changes, pointing out that the change in the needs of the armed forces is an important factor, as well as the simple correction of errors and mistakes that had been made in the original draft, and revision to limit the legal verbiage with which these orders have been clothed.

Headliners
E. L. Filby, Field Dir., Comm. on Water & Sewage Works Development, New York City
Samuel B. Morris, Pres. AWWA, Stanford Univ.

Among the changes noted is the allowance of any kind of pipe for installations of 2 in. or less, but all pipe over 2 in. being restricted to cast iron (except in special cases).

When the extension of a service is simpler by laying another line than by replacing the present installation, such an action is considered an extension, not a duplication, and will therefore be allowed.

Certification under the U-1 order now reads U-9, not MRO, in order to help bookkeeping at the mills. There are now two ratings for obtaining material, AA-3 for materials for minor construction, and AA-1 for maintenance and repair supplies for classes of distribution materials.

Mr. Valle said that the inventory record results should include the dollar value of all minor capital additions up to $1,500 for underground and $500 for above-ground installations, but exclude major capital additions. The net dollar value is equal to the cost of all materials installed less salvage.

Conservation of Water Supply

In discussing the background of the reason for conservation of water supply, Mr. Lloyd Nelson, Principal Engineer, Water Division, OWU, called attention to the fact that whereas Britain mined but 30 million tons of coal a year and Italy mined practically none, it was up to the United States to supply Italy with coal out of its yearly production of nearly 600,000,000 tons. In order to obtain this coal without unduly restricting and rationing the individual consumers, Messrs. Nelson, Ickes and Eastman had decided on a voluntary conservation program. It is hoped that this program, which will be highly advertised, to conserve heat, light, power, gas, and water, will save sufficient coal to allow the furnishing of Italy's needs. If home heating alone could be brought to an efficient standard, 18,000,000 tons a year of coal could be saved.

The water conservation campaign

Headliners
Paul Valle, Administrator of Order U-1, OWU, Washington
H. Lloyd Nelson, Prin. Engr., Water Division, OWU, Washington

is divided into three parts: appeal to customers to save water by stopping waste, appeal to industry to save water by stopping waste, and appeal to water utilities to improve operation, where possible, to eliminate waste and reduce power consumption.

Programmers

Robert C. Wheeler, Cons. Engineer, Albany, N. Y.

Earl Devendorf, State Water Coordinator, Albany, N. Y.

Mr. Nelson showed posters, newspaper pictures, and advertisements which it is hoped will bring this program to the attention of everyone in the United States; for, as Mr. Nelson points out, now is the time for everyone to exert every effort to do even the smallest thing that will aid in knocking the Axis out of the war.

Post War Planning for Water Works

E. L. Filby, Field Director, Committee on Water and Sewage Works Development, spoke on post war planning for water works. Quoting several paragraphs from the first release of the committee, Mr. Filby pointed out that this was the old-fashioned kind of committee with a name, not just an alphabetical designation. It also has a plan, a program, and practical thinkers to promote it.

The ideas and program of the committee are summed up in the statement that the committee believes "adequate water supply and intelligent waste collection and disposal, are within the reach of every city," and this type of public works is "essential in a well balanced city or region, as well as being a part of industry and a complement to it." This attitude, it is hoped, will stimulate activity of the cities of North America to appraise the need of water and sewage works improvements or construction, develop orderly programs for meeting these needs, prepare detailed plans and specifications as soon as possible, develop methods of funding necessary construction, preferably without Federal aid, and definite scheduling of the construction program.

Binghamton's Water Supply Improvements

Robert C. Wheeler, Consulting Engineer of Albany, gave the story of the "Recent Improvements in the Binghamton Water Supply." These improvements, carried out under a PWA program in 1939 and 1940, were undertaken as a rehabilitation measure to put the plant in condition for an additional 20 to 25 years of service.

Binghamton's water supply is taken from the Susquehanna River, augmented by a small amount of ground water. The operation of the water system is somewhat complicated by reason of three pressure zones, low, intermediate, and high, with a pressure difference of 58 ft. of head between the two extremes. Cross compound pumping engines in the plant were utilized in the rehabilitation insofar as possible. A 20,000,000 gallon filter plant existed, but operation was not continuous, and chemical dosages frequently were below or above the optimum value.

Programmers

E. J. Rowe Supt. Water & Light Westville, N. Y.

F. J. Hallman Dept. Health Chemist Albany, N. Y.

The solutions of the problems were directed first towards consolidation of the two lower pressure zones into one; second, by the installation of a well; and, third, to recondition and improve steam equipment to take advantage of its remaining life. The original plans called for an expenditure of $850,000 and included a large reservoir, but the money available was only $550,000 and it was necessary to eliminate the reservoir and consolidation of the low intermediate pressure zone from the plans.

The actual improvements included the enlargement of an under-capacity coagulating basin, the installation of a Ranney water collector system for the underground supply, overhaul of filters, new boilers, a new well with Permutit softener. All of this work had to be done without loss of water supply to consumer. The ground water supply from the well is used primarily for the purpose of furnishing alkalinity for coagulation when the alkalinity in the river water drops.

Mr. Simon P. Carman, Engineer of the Bureau of Water, Binghamton, discussed Mr. Wheeler's paper and commented on the reason for consideration of wells in the city. Originally the city did not own the riparian rights to the dam which impounded the water supply, and it was decided to install a well for comparison with the river in order to decide whether or not the source of supply would be changed.

The city finally bought the dam and repaired it in order to raise the water level and reduce the cause of taste and odors. One of the questions to be answered was whether municipally owned wells would encroach on the aquifers of industry, since many industries had private wells.

New York State Mutual Aid

Earl Devendorf, Asst. Dir. of Sanitation, N. Y. State Dept. of Health, and State Water Coordinator of the N. Y. State War Council, brought those in attendance up to date on the Mutual Aid Plan as it has worked in New York.

Mr. Devendorf had queried all of the zone coordinators and assistant coordinators on the functioning of the training program. Most of the zones reported good attendance and interest at these schools. In Buffalo, 350 took the training; another zone reported that on a county basis, one person per thousand attended the sessions. For 230 municipalities in

A Session

The Head Table

Banqueteers

five statewide schools the attendance was over 500. Thirty-five subsequent schools drew an attendance of 2,500.

Mr. Devendorf commented favorably on the Incident Planning Committee as set up by Alan Drake, District Coordinator in Buffalo. Although the auxiliaries who have attended these schools have not as yet found it necessary to put their newly acquired knowledge to use, the military still believes that small raids on the coast are possible.

Mr. Devendorf doesn't believe that the excess stock inventory compiled a year or so ago needs to be reviewed, because of the small amount of construction that has taken place.

There are now 228 interconnections, most of which stem from the mutual aid plan. Nassau County alone has 23 interconnections. Maps of water systems and interconnections are now practically complete. Conservation of water supply, as a part of the national conservation program to save fuel, has already been started at Elmira and Jamestown.

Post war planning in New York State is needed in all plants, according to Mr. Devendorf, and in view of this fact the state has made available a sizable sum of money which will be given to the municipalities to defray one-half the cost of preparing post war plans.

The Public Utility Goes to School

E. J. Rowe, Supt. of the Water and Light Dept., Wellsville, N. Y., read one of the most interesting papers of the day, telling of how the water plant operation is taught to the school children.

For the past 20 years the Village of Wellsville has been experimenting with, and developing, a system of reaching the public without propaganda. The system used had been to teach the school children about the problems of the public utility operator. The benefits over a period of years are apparent in the interest of the community, and the pride that the community takes in the water utility. Not only are the children, themselves, acquainted with the water plant operation, with the result that as they become adults they have a better appreciation of the water plant, but also the children's parents become more keenly aware of the relation of water to the life of the community.

The early attempt to bring the water plant to the school child was to demonstrate the plant operation in the classroom by means of large cards and miniature equipment. Something was still missing from this system, and it was found that the preparation of a mimeographed bulletin to give a continuity of words reproduceable each year, was of considerable benefit.

The school uses the treatise for one week's study, following which the children are conducted on a tour of the plant. Guides for the tour are the same persons for each part of the plant each time. The selection of a guide most familiar with a particular phase of the plant operation, e.g., filtration, pumping, or laboratory technique, has the advantage that each guide becomes an experienced instructor, well acquainted with his own particular field.

At the present time the topic is taught in the ninth grade as a part of the science course, and explains cause and effect in water plant operation, as well as many of the problems of operation and control.

Mr. Rowe is firm in his conviction that this method of teaching establishes good will with the public, and is well worth the time and trouble. So successful has the system been, that it is now being expanded to cover all of the phases of the municipal government.

Arousing the interest of the future generation in the utilities and governmental departments serving the municipality is bound to reflect advantageously in the future development of the social and political life of the community.

In discussing Mr. Rowe's paper, Thomas A. Cole, Sup't of Filtration at Poughkeepsie, N. Y., said that he concurred in the belief in importance of the study of the water plant by the school child, and suggested that the trips begin early in the school curriculum, with repeat trips being made in the seventh or eighth grades. Poughkeepsie finds that these inspections are quite helpful.

Among Those Present

(1) *E. A. Sigworth, Ind. Chem. Sales Co., New York, N. Y.*

(2) *J. McClure Wardel, Supt. Pub. Works, Hudson, N. Y.*

(3) *H. G. Turner, Research Engr., State College, Pa.*

(4) *Newell L. Nussbaumer, Comm. Pub. Works, Buffalo, N. Y.*
H. Lloyd Nelson, W.P.B., Washington, D. C.
Roy O'Mella, Supt. Pub. Works, LeRoy, N. Y.
Sven Svenson, U. S. Cast Iron Pipe Co., Buffalo, N. Y.

(5) *Henry Wagner, Chief Chemist, Div. of Water, Buffalo, N. Y.*

(6) *Wm. A. McCaffery, Supt. of Water Works, Oswego, N. Y.*

(7) *R. T. (Dick) Ockershausen, General Chem. Co., Edgewater, N. J.*

Determination of "Active" Chlorine

Francis J. Hallinan, State Dept. of Health Laboratory Division, told of the experimental results obtained, and the technique used, to determine "active" chlorine by a combination of ortho-tolidin and sodium arsenite reagents. According to Mr. Hallinan, residual chlorine colors obtained with ortho-tolidin alone may represent active chlorine, chloramine chlorine, or interfering substances, such as manganese, nitrites, and iron. By the test proposed, a differentiation may be obtained, according to Mr. Hallinan.

The technique of the test consists of reading the color value in two bottles or tubes of the sample treated with the two reagents, ortho-tolidin and sodium arsenite added in reverse order. That sample treated with ortho-tolidin first, followed by the addition of arsenite reagent, will give a color caused by chlorine, and all interfering substances. That sample treated with arsenite reagent first, followed by ortho-tolidin, will give a color caused only by the interfering substances, nitrite, iron and manganese. The difference between these two color readings is a measure of the chlorine present. (The

results are 2 per cent low because of the dilution by the reagent).

To determine the difference between active chlorine and chloramine chlorine, the following test is used: To one sample, add ortho-tolidin reagent, which will produce a color representing chlorine, chloramine, and all interfering substances. To another sample, add ortho-tolidin followed by the arsenite reagent. The color developing represents chlorine and interfering substances. The difference in reading of these two samples is equivalent to chloramine chlorine.

The method is applicable using French square two ounce bottles, commercial test kits, or Standard Methods technique. Colors produced are natural, and the same between 4 deg. and 20 deg. C.

The test is not absolutely quantitative, for the determination of chloramine may be as much as 3.5 per cent low, and because of certain other factors, the determination of chlorine may be 7 per cent low. Timing is important in the test. Up to relatively high limits of impurities or concentrations of chloramine, Mr. Hallinan believes that the test is quite applicable, particularly for control work.

Round Table Discussion

Most of the round table discussion was centered about the proposed ortho-tolidin arsenite test for active chlorine, with questions as to its accuracy, applicability, ease of determination, and future.

Mr. Charles Cox, of the State Dept. of Health, stated that at the present time we are in a transition period as far as chlorination is concerned. He believes that super-chlorination, or break-point chlorination, is here to stay "because of the high degree of bacterial efficiency, coupled with the freedom from tastes and odors," and Mr. Cox expects that after the war there will be a decided trend towards the control of chlorination on the basis of an "active" chlorine residual. In fact, Bulletin No. 33 of the N. Y. State Dept. of Health on chlorination, now being revised, will contain this new test as a control measure.

Mr. Jackson, of Waterford, raised the question as to "what is chlorine demand?" At times his water plant turns out a water containing from 3 to 5 parts per million of chlorine residual without taste. Water so highly chlorinated, when pumped to an elevated tank, is found to be lacking in chlorine residual on the following morning. In fact, laboratory tests on gallon samples, stored 30 hours in the dark, showed the following results:

p.p.m. Chlorine Dosage	p.p.m. Residual Chlorine After 30 Hours
16	Tr
40	0.7
100	10.0
200	40.0

Mr. Jackson wanted to know what the chlorine demand of water was.

Mr. Cox stated that chlorine demand was not a fixed quantity, but depended on the chlorine demanding materials present, the concentration of the chlorine dosage, temperature, and contact time.

Another paper which came in for a great deal of favorable comment and discussion was that presented by Mr. Rowe on the teaching of public utility operation and functions to school children. So keen was the interest in the topic, that Mr. Rowe was swamped with requests for copies of the brochure which is used as the text for the lectures.

WATER DIVISION, OWU, REORGANIZES

On October 26, reorganization of the Water Division was effective. The Division now consists of two sections—Water Supply, and Materials Distribution.

The Water Supply Section has six functions in which it will cooperate with other Federal agencies, industries, or other sources in studying the requirements for water, investigating the adequacy of water supply systems, and programs for the use of existing facilities.

This Section also will prepare programs and take appropriate steps to develop additional facilities where necessary, work out arrangements for water utilities to serve major war industries, and advise governmental planning agencies as to the availability of water at proposed locations of war plants.

The Materials Distribution Section likewise has six functions, which include analysis and recommendation of priority and allocation actions, processing CMP forms, performing follow-up on approval of water works construction, cooperation with the Equipment Production branch of OWU, maintenance of contacts with other Industry Divisions, and development of more effective use of water works material by cooperation with Inventory Control Branch.

The administrative officers identified with the new organization are Arthur E. Gorman, Director, Water Division; Daniel V. McCarthy, Executive Assistant; William D. Williams, Chief, Walter L. Leach, Deputy Chief, Water Supply Section; Harvey S. Howe, Chief, Newton B. Lyle, Deputy Chief, Materials Distribution Section.

The Water Supply Section has been organized on a regional basis, which will permit the development of closer relations between water utility operators and the Water Division. Regional engineers have been appointed to cooperate with water utilities in connection with problems of maintaining supply and service during the war, and it will be the duty of these regional engineers to assist in development of necessary projects and to prepare recommendations regarding allocation requirement of materials and equipment quarterly.

The regions and the regional engineers assigned to them are listed as follows:

REGION I—New England and New York; Bayard F. Snow, formerly Consulting Engineer, Boston, Mass.; Asst., J. Walter Ackerman, formerly Chief Engineer and Supt., Consolidated Water Co., Utica, N. Y.

REGION II—Pa., N. J., Del., Va., N. C., and D. C.: George C. Sullivan, formerly engineer with Blaw-Knox Co., Pittsburgh, Pa.; Asst., T. L. Hudson, formerly Senior Engineer, U. S. Engr. Dept., Baltimore, Md.

REGION III—Tenn., Miss., Ala., Ga., S. C., and Fla.: Carl W. Smedberg, formerly City Manager, Greensboro, N. C.; Asst., Howard S. Wakefield, formerly Assistant Engineer, Charles T. Main, Inc., Kingsport, Tenn.

REGION IV—Wis., Ill., Ind., Mich., Ohio, Ky., and W. Va.: Frederick H. Weed, formerly Consulting Water Works Engineering practice with Allen Hazen, Geo. W. Fuller, and James H. Fuartes; Asst., Robert L. McGrath, formerly Engineer, U. S. Dept. of Agriculture Soil Conservation Service, Washington, D. C., and prior to that Engineer, Burns & McDonnell, Cons. Engrs., Kansas City, Mo.

REGION V—N. D., S. D., Minn., Neb., Ia., Kan., Mo., Okla., Ark., Tex. and La.: Ray B. Plummer, formerly Asst. Chief Engr., Stuart-Warner Corp., Green River Ordnance Plant, Dixon, Ill.; Asst., William J. Keays, formerly Senior Conservationist, U. S. Indian Service, C. C. C. Division, Phoenix, Ariz.

REGION VI—Wash., Mont., Ore., Idaho, Wyo., Calif., Nev., Utah, Colo., Ariz., and N. Mex.: Gerald E. Arnold, Sanitary Engr. (R), U. S. P. H. S. under special assignment. Formerly Sanitary Engr., San Francisco Water Department.

PA. WATER WORKS ASSN. HOLDS 48TH MEETING

The President

J. H. Murdoch, Jr.
Counsel
Am. Water Wks. & Elec. Co.
New York

New Secretary

Edw. R. Hannum
Manager
Richland Twshp. Water Co.
Windber, Pa.

THE 48 year old Pennsylvania Water Works Association, whose membership is limited to managers and other officials of privately owned and operated water utilities, because of war conditions departed from long time custom of meeting in Atlantic City to hold a one day conference in Harrisburg, Pa., on October 13th.

The theme of the conference being "War and Peace," it was particularly interesting to this reporter to hear the discussions by officials of privately operated water works concerning their problems of tomorrow — meaning the problems ahead in the immediate post-war period. And, more importantly, the plans of these privately operated water utilities to put wartime accumulated earnings back into the properties for the dual purpose of improving the systems and providing work in the post-war period for men at home as well as in manufacturing plants elsewhere which will supply the equipment and materials.

Hannum Made Secretary. Miss Wolfe Retires with Honors

E. R. Hannum, manager, Richland Water Co., Windber, Pa., who has for sometime been serving as chairman of the Executive Committee was elected Secretary and Treasurer of the Association.

Miss Lillian E. Wolfe, comely and capable Acting Secretary and Treasurer since the death of Secretary Snow, having requested to be permitted to retire. In granting this request, at the end of a decade of efficient service to the Association, the Executive Committee elected Miss Wolfe, Lifetime Honorary Secretary. President Murdoch who highly praised the work of Miss Wolfe presented the honor with a kiss for each cheek and a handsome armful of eleven American Beauties —the recipient making the score an even dozen. (See accompanying picture. Ed.)

Officers—Some New and Some Not So New

One of the first orders of business was the election of officers for the ensuing year. Van Horn Ely, Jr., Phila. Suburban Water Co., Chairman of the Nominating Committee presented the following slate. The election was unanimous.

President
John H. Murdoch, Jr., Counsel
American Water Works and Electric Co.
Vice Presidents
Wm. H. Miller, Jr.
Lewiston-Reedsville Water Co., Reading
Nathan B. Jacobs
Morris Knowles Engineers, Pittsburgh
W. F. O. Rosenmiller
The York Water Co., York, Pa.
Secretary and Treasurer
E. R. Hannum
Richland Water Co., Windber
Additions to Executive Committee
(Three Year Terms)
Rubison Evans (Wilkes-Barre); Chas. L. Fox (Wilkinsburg); W. McK. Reber (Bloomsburg); D. E. McWilliams (Shamokin); J. F. McClure (Lewisburg); Wm. H. Miller, Jr. (Reading); Wm. Insull (Latrobe). (It was announced that Miss Edith Markley had been appointed Assistant Secretary.)

Vice-President and Honorary Secretary

Nathan B. Jacobs, Consulting Engineer, Morris Knowles, Inc., Pittsburgh, Pa., and Lillian E. Wolfe, Harrisburg, Pa. (Retiring after ten years as Asst. Secy. and Treasurer, became Honorary Secretary by acclaim.)

"War *and* Peace"

Following the announced theme of the program the opening paper carried the title **"Keeping Ready for War"** and was presented by L. D. Matter, District Engineer, Pa. State Dept. of Health, who has been serving as Deputy State Water Coordinator under the President of the Association John H. Murdoch, Jr., as State Coordinator.

Committee Chairmen

Joseph A. Beck
Attorney
Pittsburgh, Pa.
(Legal Committee)

Van Horn Ely, Jr.
Manager
Phila. Suburban Water Co.
Bryn Mawr, Pa.
(Nominat'g Com.)

Pointing to the fact that dangers of sabotage to critical water utilities can not be considered past, Mr. Matter warned against letting down in protective procedure and plans. He then told of what had been accomplished to date in Pennsylvania in developing the Mutual Aid Plan as a permanent asset to water utilities as well as a wartime movement. Pennsylvania has 16 Mutual Aid Districts, each with a District Coordinator. District inventories and a confidential central inventory are being developed after considerable hesitancy on the part of about 50% of the water works managers to respond in 1942 to requests for inventory records. Mr. Matter laid emphasis on the lasting value of the inventory scheme and pointed to its usefulness already in two or three cases.

Mr. Matter said that the more critical systems had been surveyed for weak spots and points of vulnerability. Plans had been made to insure aid for such critical systems. Also plans had been developed at important Central Centers which made positive that in case of an emergency water supply is to be handled only by experienced water works men.

An added service to water utilities by the Coordinator comprises the listing for sale of water works equipment and materials no longer needed by the offering utility and

those constituting excess inventory under W.P.B. rulings.

"Getting Ready for Peace"

Nathan B. Jacobs of Morris Knowles Engineers, Pittsburgh, as Vice President of the Association, presented under the above title a splendidly prepared discussion of what it takes to post-war plan effectively and how post-war planning can best be applied by the privately owned water utility.

He gave statistics and recent facts pertaining to the cancellation of war contracts amounting to about ten billion dollars, and pointed to the releasing of many service men already, as indications that post-war conditions are already developing and the water supply as well as other industry cannot afford to be caught unprepared as was the case after World War I.

To plan for making work without such work producing useful betterments is folly of course, and planning under duress is extremely wasteful. Water utilities must return to the spirit of private enterprise and rebel against continuation of regimented economy, Federal paternalism and moral destroying handouts from the Federal treasury.

The following constituted suggestions to the water utility looking ahead. The first consideration should be an exact study which will result in placing first things first in the plan. From this point plans and specifications should be completed and ready for immediate use without delay when the effective time arrives. At the same time the financial plan should be drawn. In this regard money at present is so plentiful and cheap the situation should be taken advantage of for securing bonds under such favorable conditions.

Of course, said Mr. Jacobs, the immediate need will be the catching up on deferred maintenance and replacement of substitutes used during the war. He also added a word of caution against going too long in deferred maintenance which in some instances is a hazardous procedure and too risky to save as a post-war undertaking. Also delayed maintenance is apt to prove a too expensive procedure, recalling the "stitch in time, etc." adage.

David C. Morrow
Am. Water Works & Elec. Co.
New York
(Holds 17 votes on the Exec. Com.)

L. D. Matter
Pa. State Dept. Health, Harrisburg
(Deputy State Water Coordinator)

Coming to the matter of waiting for "the new materials," improved equipment design, etc., which many have the impression are to appear on the market as soon as the shooting stops, Mr. Jacobs stated that in the water supply field apparently very little of this was to be expected. Aluminum would be more prevalently used for a greater variety of applications and plastics likewise. In water supply the hazard of experimenting with new materials is too important a consideration. Therefore, it behooves the engineer or water works manager to stick to the "tried and true" in plans and specifications, but at the same time contemplate the possibility of making changes in the specifications, which can always be done up to the time of advertising for bidders.

Some O.W.U. Information, and Water Conservation Program

H. Lloyd Nelson, of U. S. Pipe, and serving as Principal Consultant to the Water Division of the Office of War Utilities, came with information that the Water Division of W.P.B. is now well staffed with 30 practical water works men. (See news item on new organization arrangement of the Water Division which appears elsewhere in this same issue.—Ed.)

In discussing the situation in maintenance of water systems, Mr. Nelson commented that on the whole only one half as much critical materials as is permitted under the U-1 orders had actually been used during the year. While this seemed a splendid record, it might not prove so if maintenance is cut back too severely or for a protracted time.

As to the coal situation, rationing is not anticipated unless the voluntary plan of equitable distribution, now in force, fails. To save coal and other fuels, the nation wide Utilities Conservation Program gotten underway from Washington was expected to aid materially in the present strain. On the water supply end A.W.W.A.'s Wartime Committee had taken on the job of promoting "Water Conservation" and a guide bearing this title had just been produced. Mr. Nelson then described the valuable information and suggestions contained in the guide as he leafed it through and held up pages of illustrative material for the benefit of the audience. Distributed gratis by A.W.W.A. to all of the larger water utilities, it is suggested that if the guide seems worth the production price of $2.00 per copy a check will be appreciated at A.W.W.A. headquarters since the Association is out of pocket approximately $3,000 as the cost of the profusely illustrated brochure. (Extra copies may be ordered at $1.00 each provided the surplus is not exhausted before the re-order arrives. Since, however, the guide "Water Conservation" has a decided all-time value as well as wartime value, it seems reasonable to anticipate that orders for it will require a second printing in the end, thus providing copies for every water works regardless of size.—Ed.)

In the direction of fuel and power

Carl I. Kear
Manager
Water Co.
Minersville, Pa.

E. H. Williams
Manager
Water Co.
Mt. Carmel, Pa.

Geo. W. Naylor
Manager
Riverton Water Co.
Leymoyne, Pa.

W. H. Booker
Major
U. S. P. H. S.
Washington, D. C.

C. E. Burlingame
Manager
Water Co.
Berwick, Pa.

Webber Knight
Manager
Water Co.
Natrona, Pa.

Nathan Jacobs
Consulting Engr.
Pittsburgh, Pa.

saving, Mr. Nelson enumerated the following suggestions, looking to reduction of pressures on the pumps.

(1) Cleaning of mains, and preferably re-lining.

(2) Tieing in of dead ends to arterial mains.

(3) Load distribution scheduled to reduce peaks.

In addition: Checking pumps for efficiency; leak detection and correction and an educational program to encourage correction of drips and reduction of consumer waste, were obviously measures to consider in the conservation program. Inasmuch as the minor drips are not registered by the majority of meters, the consumer educational program is not expected to cut revenues to any noticeable degree.

Mr. Nelson, in looking ahead, warned of the importance of O.W.U. knowing adequately in advance of what critical materials are to be needed in the water supply field for the year ahead. This situation makes it imperative for all who contemplate plant improvements or enlargements during 1944 to prepare rather concise estimates of materials and notify the Water Division of O.W.U. in order that requests for allotments under the Controlled Materials Plan may be spoken for in the division of available critical materials. For this purpose form W.P.B. 2774 may be used by the utility contemplating construction even though such be not planned until early 1945.

In reply to questions, Mr. Nelson said that for the present lumber is even more critical than copper. While the Copper Division still insists on water utilities holding copper tubing, there is little probability that such tubing will be confiscated as scrap copper—definitely not for a few months at least. The tubing may be taken for use as tubing at any time. In the meantime, in reasonable amount copper tubing on hand may be cut into goose-necks for use in connecting rigid service lines to the main. Such use of copper tubing has been considered a permissible use by the Copper Division upon recommendation of the Water Division. Preferably a request for authorization should be filed by the utility, in order to avoid later controversy.

As to services lines and extensions of mains, the only restriction now imposed by the U-1 order is that of weight of pipe. The smaller the pipe the longer the run may be. The limit of 1800 lbs. of C.I. for a domestic extension will permit 50 ft. of 6" C.I. and 60 ft. of ¾" steel or

Pennsylvania Water Co.

(Wilkinsburg, Pa.)
David H. Loeser, Accountant
Chas. L. Fox, Manager and Chief Engr.*
Geo. R. Craig, Sec'y and Attorney
*(*Member, Executive Committee)*

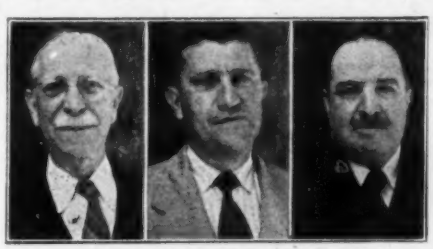
wrought iron pipe. (Since C.I. is less restricted than steel, it is evident that within the 9 ton weight limitations a considerable run of 2" C.I. pipe can be installed as a service or extension for the duration and replacement made when conditions warrant.—Ed.)

Afternoon to the Lawyers

It was interesting that the morning session was given over to the engineers, the luncheon address to a college president, now Director of Civilian Defense for Pennsylvania—Dr. Ralph C. Hutchison — and the afternoon session to the lawyers.

The first lawyer, **George R. Craig,** Attorney and Secretary, Pennsylvania Water Co., Wilkinsburg, Pa. presented a review of **"Legal Developments in Pennsylvania"** of interest to water works operators. The case of outstanding interest on which the Court rendered an almost unbelievable opinion was that of the Natrona Water Co. in which the plaintiff contended an inadequate water supply and pressure resulting in needless property loss resulting from a fire. The decision rendered, on basis of the Common Law, was that a privately operated water utility is *in fact* performing a municipal function in supplying water for fire fighting. Therefore, the Natrona Water Co. could not be brought to trial for failure to supply water for fire fighting, whether by negligence or otherwise.

Mr. Craig amongst other things of less direct interest reported that the surplus now accumulating in water company treasuries was being



Columbia Water Co.

(Columbia, Pa.)
Genl. E. C. Shannon, President
Ted H. Kain, Manager
Wm. H. Baker, Vice-President

considered by the Public Utilities Commission as an artificial condition justifying no hearings for the duration on any pleas for rate revisions by customer or municipal authorities. The policy is, further, that cash should be conserved by the utilities for post-war improvements.

Joseph A. Beck, Attorney-at-Law, Pittsburgh, Pa., who reviewed **"Federal Developments,"** of interest to water operators had very little of direct interest to recount this year. Decisions of the U. S. Supreme Court were indicative of the times and decisions badly split between the justices on questions as to "When is a firm in Interstate Business?" Some very far fetched opinions have been rendered and it seems highly reasonable to this reporter that a water company supplying water to common carriers crossing state lines could be held subject to labor and tax laws pertaining to interstate trade. Even, perhaps, when the water sold is used in beverages sold in interstate trade.

Interesting was the case affecting rates of a gas company in which the District Court reached a decision based on the Federal Power Commission's evaluation determined on actual cost of the utility properties with straight line depreciation. The Circuit Court of Appeals thereafter reversed the District Court's opinion, ruling that *"going value"* of plant must also be considered in utility evaluation cases. This case will reach the Supreme Court with but little question, thinks the astute Jo. Beck. A rate of 6.2% earnings on investment was allowed by both courts.

As an explanation of the sparcity of rate cases in the courts, Mr. Beck cited the fact that courts cannot make a case for reduction in rates with taxes rising. On the other side Federal law now requires application to no less than the President of the U. S. or to the O.P.A. for rate increases. While there's a war to be won only a life or death rate question would justify either procedure.

"How Can Water Utilities Help Win the War and the Peace?"

This was the theme of the closing address by President John Murdoch. Since this talk and that made a month earlier by Mr. Murdoch in Pittsburgh are so nearly the same we refer the reader to the address highlighted in the report of the "Penna. Joint Meeting" which appears as the second item in this same issue.

LAUNDRY WASTE TREATMENT BY FLOTATION

By MAJOR ROLF ELIASSEN and
HENRY B. SCHULHOFF, Asst. Chemist
NORTH ATLANTIC DIV., U. S. ARMY ENGINEERS
NEW YORK, N. Y.

DILUTION of laundry wastes with municipal sewage is undoubtedly the most widely used method of disposal of these strong wastes. Although noticeable in many municipal plants, the presence of these wastes only in exceptional cases gives rise to operating problems, other than that of an increased load of grease and scum. However, where sufficient dilution is not available problems do arise, and this difficulty is found in a number of suburban communities where large laundries cater to the trade of a neighboring metropolis. The quantity of laundry wastes may then rise far out of proportion to the population residing in the community. The same situation may exist at institutions and at Army camps. Especially is this true where a large Army laundry may handle work for a number of nearby posts.

The Senior Author

In the latter instances, separate treatment of the waste from the laundry must be undertaken. This also holds true when the wastes are discharged directly into a stream where problems will be created by sludge banks, scum formations and reduction of dissolved oxygen in the receiving stream.

Analyses of the liquid wastes from a number of laundries, both Army and civilian, indicate that the strength of the wastes may vary over a wide range, depending on the discharge of the washing machines, whether from the break, the suds or rinsing operations; the type of water used; and the material being

Fig. 1—The Junior Author, Flotation Apparatus and Trailer Laboratory
Official Photograph—U. S. Army Air Corps.

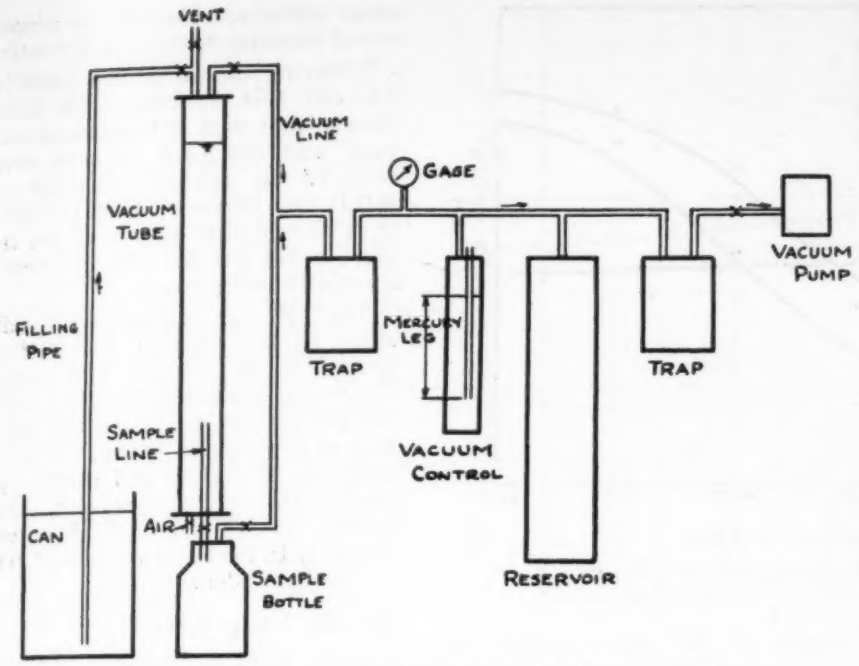


Fig. 2—Diagram of Laundry Waste Flotation Apparatus

washed. Average values may be considered to be about as follows:

Item	P.P.M.
Suspended Solids	500
Total Solids	1500
Petroleum Ether Soluble Matter	500
B.O.D.	1200
Total Alkalinity	600
pH	10.0

Separate treatment of laundry wastes has generally been accomplished by chemical precipitation using iron salts, lime, alum, and sulfuric acid as coagulents or conditioners. The literature cites dosages of chemicals from 100 to 2,000 p.p.m. to accomplish the desired results. Holding tanks are recommended to iron out peak strengths and volumes of the waste and to permit a more uniform dosage of chemicals.

Flotation vs. Precipitation

The major difficulty encountered in the chemical precipitation of laundry wastes has been the fact that some coagulants when used with certain waters induce flotation of the coagulated solids rather than precipitation. This is particularly true if carbonate or bi-carbonates in high amounts are present in the wastes. These may come from washing compounds or from high carbonate natural or zeolite softened waters. Most of the coagulants used in the chemical precipitation of laundry wastes require a pH of 4 to 6 for optimum results. With the lowering of the pH, carbonates release carbon dioxide gas in the coagulated waste and cause adherence of gas bubbles to floc particles with consequent rising of the floc through a lowering of the specific gravity of the mass. The settling tanks ordinarily used to settle coagulated wastes are not equipped to handle large quantities of floating sludge, and operating problems ensue.

The authors suggest that rather than consider the rising floc as a problem, the phenomenon should be assisted in every possible way to accomplish clarification of the wastes by flotation rather than by precipitation. Inasmuch as floc particles generated in these wastes are light and fluffy, most of the floc can be brought to the surface very rapidly if enough gas bubbles are present. Experience has shown that one of the most successful means of generating large numbers of very small gas bubbles is to apply a partial vacuum to a liquid saturated with air or any other gas.

Experimental Procedures

Experimental work was carried out utilizing this vacuum flotation principle by means of the apparatus shown in Figs. 1 and 2. Analyses were made in the trailer laboratory shown in Fig. 1. By means of vacuum a twenty liter sample of the waste was drawn into the Lucite tube, 6 inches in diameter by 6 feet long, from the compositing can shown in Fig. 1. Aeration of the waste by diffused air was carried out for five minutes after the addition of a coagulant. Valve settings were changed and a vacuum equivalent to 15 inches of mercury was applied over the surface of the sample for five minutes. Small gas bubbles were generated throughout the entire mass as the super-saturated solution of air and carbon dioxide was brought to equilibrium. These bubbles attached themselves to floc particles so rapidly that within five minutes all of the floc had floated to the surface.

After flotation had been completed, a vacuum was applied to the sample bottle in Fig. 1 and a few gallons of the underflow was withdrawn for analysis. Vacuum had to be maintained over the surface of the liquid during withdrawal of the

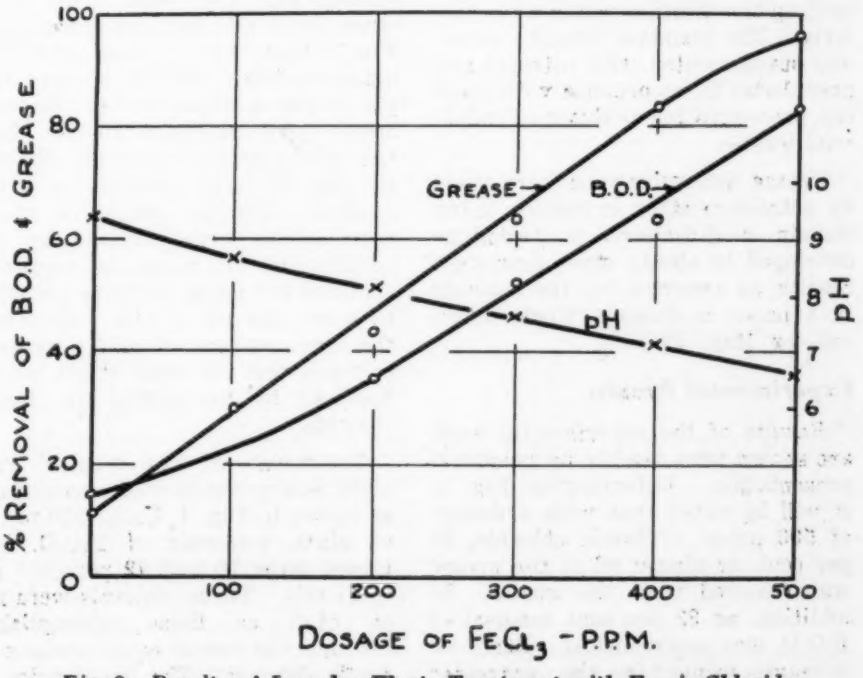


Fig. 3—Results of Laundry Waste Treatment with Ferric Chloride

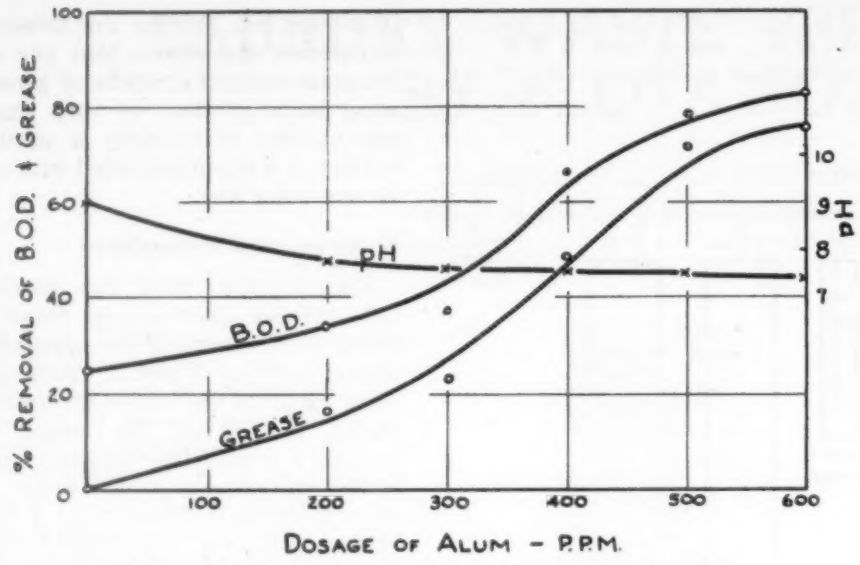


Fig. 4—Results of Laundry Waste Treatment with Alum

underflow to keep the floated solids at the surface.

As far as disposal of the treated waste to a stream or sewage treatment plant is concerned, the analyses of greatest interest would ordinarily be pH, suspended solids, B.O.D., and grease. Suspended solids content of the waste, however, increases considerably with the addition of several hundred p.p.m. of a coagulant. Even though a good portion of the organic matter may have been removed, the suspended solids may show a higher value than the influent. For that reason, effectiveness of laundry waste treatment may best be judged by the removals of B.O.D. and grease.

Determinations of B.O.D. were made on samples of the waste by seeding the dilution water with bacteria. The standard dilution water was supplemented with nitrates and phosphates in accordance with modern procedure for analyses of industrial wastes.

Grease determinations were made by petroleum ether extraction using certain modifications in technique developed to obtain more consistent results as reported by the authors in a paper in Sewage Works Journal for May, 1943.

Experimental Results

Results of the experimental work are shown most readily by graphical presentation. Referring to Fig. 3, it will be noted that with a dosage of 500 p.p.m. of ferric chloride, 97 per cent, or almost all of the grease was removed from the wastes. In addition, an 83 per cent removal of B.O.D. was accomplished. Based on average values in the untreated wastes of 500 p.p.m. grease and 1,200 p.p.m. B.O.D., the analyses of the treated wastes showed approximately 15 p.p.m. grease and 204 p.p.m. B.O.D., approximating the values of these analyses in ordinary domestic sewage. It should be interesting to note that the average suspended solids in the effluent was 60 p.p.m. when this dosage of ferric chloride was used. Based on an average of 500 p.p.m. in the raw wastes, this was equivalent to a suspended solids removal of 88 per cent.

It is evident that pH values are extremely important in the treatment of laundry wastes. From the results of these experiments, and those of others, it may be seen that removals of B.O.D. and grease increased with a decrease of pH value when using iron salts as coagulants. Fig. 3 shows that the addition of 500 p.p.m. of ferric chloride lowered the pH of the mixture to 6.6. Experiments were conducted on the addition of the acid to lower the pH and the use of ferric chloride as a coagulant. Results similar to those noted above were achieved by the addition of 675 p.p.m. of sulphuric acid and 100 p.p.m. of ferric chloride to lower the pH to 4.4. However, the large amount of acid necessary to reach this pH value would not be balanced by the saving in ferric chloride.

Treatment of the wastes with alum was accomplished successfully as shown in Fig. 4. Using 500 p.p.m. of alum, removals of B.O.D. and grease were 78 and 72 per cent respectively. These removals were not as high as those accomplished through the use of equal dosages of ferric chloride. The lower price of alum, however, makes its use a matter of economy with certain wastes.

Lowering the pH of the waste to 4.4 and then treating with alum showed that with 675 p.p.m. of sulfuric acid, 300 p.p.m. of alum were required to achieve removals of B.O.D. and grease up to 80 per cent. It is evident that alum does not require a low pH for effective treatment of laundry wastes.

The pH was lowered with acid alone to see whether the matter present in the wastes would coagulate to any great extent. Even with the pH lowered to 2.3 by the addition of 1,800 p.p.m. of sulfuric acid, removals of B.O.D. and grease approximated only 60 per cent. Removals do not approach those obtained with far lower dosages of ferric chloride alone.

Results Using Lime

Some experimenters have claimed success with the addition of lime to the wastes to reach a high pH and achieve coagulation with the alkaline products of reaction. Here again floating sludge has presented a problem under certain conditions. Results of experiments using hydrated lime are shown in Fig. 5. It will be noted that even with the addition of 1,200 p.p.m. of $Ca(OH)_2$ removals of B.O.D. and grease were only 48 and 17 per cent respectively. Removals of grease were particularly low at a pH of 11 as compared with almost complete removals at a pH below 7 with 500 p.p.m. of ferric chloride present, or using 100 p.p.m. of ferric chloride and enough acid to decrease the pH to 4.4.

Particular emphasis should be placed upon the amount of time required to accomplish the treatment by the flotation process as compared with the ordinary chemical precipitation procedure. In the latter, 30 minutes are required for flocculation followed by 2 hours in a settling tank. In the case of large laundries these detention periods will require fairly large tanks and floor space, inasmuch as the flow from the laundries is concentrated during only a small portion of a day. Through the use of holding tanks the flow may be spread over a longer period.

On the other hand, the flotation process requires only a few minutes of aeration followed by about 15 minutes in the vacuum tank in which flotation is accomplished. Experimental results were achieved in 5 minutes using a depth of 6 feet. A total detention of not over 20 minutes at maximum flow would, therefore, require only about 15 per cent of the total tank volume of the nor-

mal chemical precipitation plant. The saving in space might be of considerable advantage to laundries located in congested areas of cities.

Conclusions

The results of these experiments indicated that—

(1) Flotation of the coagulated particles of laundry wastes, by the application of a vacuum to the wastes previously saturated with air, caused most of the solids to float to the surface as the released air bubbles became enmeshed or attached to the flocculant matter formed in the wastes.

(2) The most economical results were obtained with the use of ferric chloride or alum and vacuum flotation.

(3) Alum proved to be the cheaper chemical and does not require as low a pH for high removals.

It should be noted that in all cases met with in actual practice it may not be necessary to accomplish these high reductions. Dosages may be adjusted accordingly to accomplish the removals deemed necessary by the method of disposal of the treated wastes. The choice of coagulants and selection of optimum dosage in a specific laundry must be predicated on experimental results at the plant itself. Dosages may vary from day to day depending on the governing factors in the operation of the laundry.

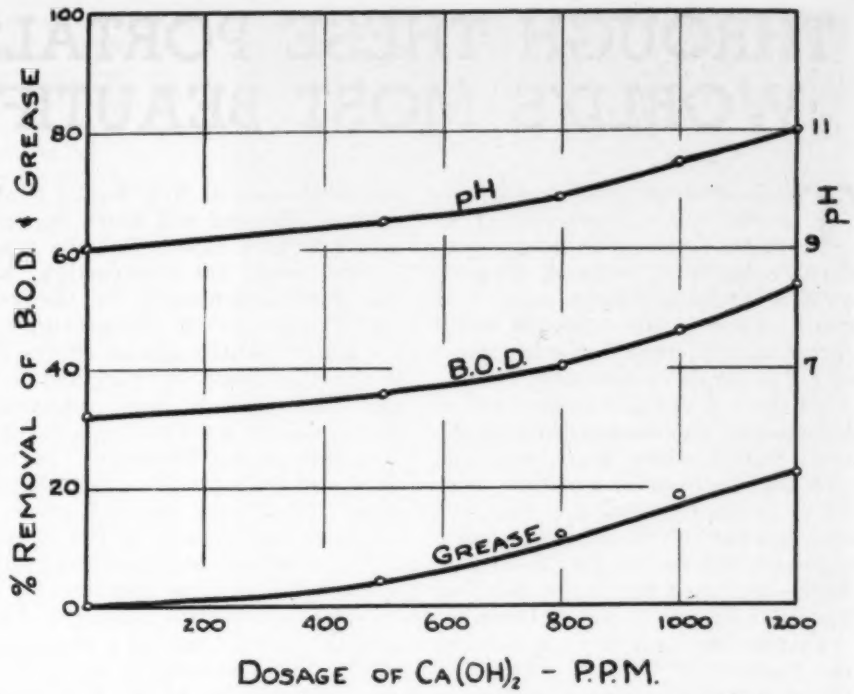


Fig. 5—Results of Laundry Waste Treatment with Lime

The significance of these results when compared with those of previous experimenters lies not in the realm of decreased dosages of chemicals but in the helpful utilization of the hitherto troublesome phenomenon of floating floc to accomplish the removal of grease and other substances from laundry wastes at a high degree of efficiency in a short period of time.

Digester Corrosion Problem (One for the Book)

By BERNARD ROWNTREE
Treatment Works Operator
CARMEL SANITARY DISTRICT
Carmel, Calif.

Here is one for the electrolysis experts to explain.

In our primary digester at Carmel is a heating coil, or heat exchanger, consisting of eight lengths of one and one-half inch galvanized wrought iron pipe installed vertically as a grid.

When the grid was installed a year ago, a galvanized malleable iron union was inserted midway in the height of each length of piping. This was done to make it possible to dismantle or assemble the piping more easily and to reduce the weight of each section to be handled. Each of the eight unions had a brass insert for its seat and the unions were all installed so that the brass insert was in the lower section or part of the union—see sketch.

The temperature of the heating water inside the piping was about 110° F. and the temperature of the sludge on the outside of the piping that was being heated was about 90° F.

Inside four of the unions the water was flowing or being pumped in one direction in reference to the brass insert, and in the opposite direction through the other four unions.

Recently the heating coil was removed for inspection in order to make certain that it was all right for the coming winter. All of the unions were found to be partly eaten away and likewise the piping on *one* side of the union.

The pipe that was eaten and the union were in every case on the side of the union that held the brass insert, as the sketch reveals.

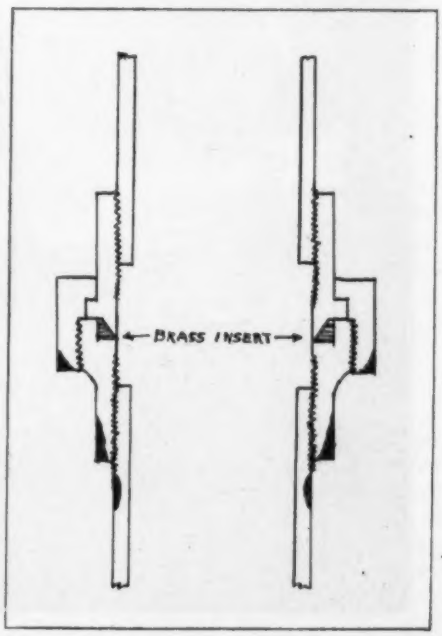
The unions were removed, about two inches cut off the pipe on the defective part, and a coupling or connector installed instead of the unions.

Query. Can some electrolysis expert tell us if it was electrolysis, and why only one side of the unions was attacked?

In the illustration the heavily shaded parts show where the unions and pipes were eaten away. In one case the pipe was eaten through.

Did the water inside the piping have anything to do with generating electricity? If the sludge produced the electric current, how could this be as the sludge did not come in contact with the brass insert inside the union? Is the evidence such as would indicate the need for protective measures for the metal steps and the metal stirring device inside the digester and submerged in the sludge? And, if so, what measures are recommended?

This problem is somewhat baffling to the writer and any suggestions from readers of *Water Works and Sewerage* will be appreciated.



Cross Section of Union Revealing Points of Corrosion

THROUGH THESE PORTALS PASSED THE WORLD'S MOST BEAUTIFUL SEWAGE*

THE greatest vandals in the world! In a single day they wrecked one of Southern California's quaintest cottages, dragged away a throne and laid a palace into ruins, uprooted an extensive dense forest, and depleted the lavish offices of a $10,000,000 corporation.

At the end of their eight hours of devastation, they washed their hands, went merrily home for dinner and took the family out to a picture show, happy in the thoughts that they had cleared away the "debris," thus making room for the winding sewers of Paris—the next set to be built on the RKO lot for "Joan of Paris."

By the time this story is printed, the "sewer set" will be a thing of the past, and no doubt a section of the Empire State Building or maybe a reproduction of New York's Ninth Avenue Elevated will adorn the spot where it once stood. But the story of the sewer, its construction, and its close resemblance to the real thing is well worth commenting on.

Chief of RKO's special effects department, Russell Sherman, and partner, Jack Lannan, were responsible for its design, construction and function during the filming of the picture, and their problems from beginning to end were no small chore.

The actual "Sewers of Paris" consist of an elaborate network of drains constructed of stone and concrete in the most substantial manner, divided into 15 classes, from the great sewers of the first class which are 18 ft. 2 in. in height by 11 ft. 4 in. wide, down to the little drains a few inches in diameter, that connect each individual house with the street drain. The discharge is carried by a tunnel far down the river at Asnieres. For drainage purposes, the city is divided into four parts by the two main sewers which run at right angles to the river. These are discharged, not into the river, but into eight channels parallel with it which, in their turn, receive the contents of fifteen tributaries fed by numerous smaller drains. The total length of the network is in excess of 900 miles, a distance about equal to that from New York to Chicago. The sewers are utilized not only for sewage and drainage but also as conduits for the water and gas pipes, and also for the pneumatic tubes that are used by the post office for the transmission of mail matter and for telephone and telegraph wires.

Some Priorities Problems to Meet

All of this had to be remembered

*Contributed by Jack Kreismer, Hollywood correspondent, now in the Armed Forces.

"The Sewers of Paris"

On the left a technician is putting some finishing touches on RKO's Sewers of Paris. On right a sewer scene from "Joan of Paris"

in simulating the set accurately. But even before actual construction began, worries about getting the necessary piping came to the foreground. The studio supply had been completely exhausted on another production which utilized thousands and more thousands of feet of pipe, and with world conditions and Government priorities to be considered, the chances of any new pipe seemed pretty slim. And it wasn't until three days before construction began that the materials did arrive. Studio plumbing departments are now all placing their orders three months or more before the time the materials are needed. And even though studios have priority rights, they keep their fingers crossed that the shipments will arrive before the time they are needed on the set.

And, Then the Work of "Sewer Artists"

Following the carpenters' wooden framework on the sewer set and the plasterers' job of covering the wood with a close representation of the actual heavy stone blocks, came the work of the Special Effects Department. First came a coating of silicate over the plaster to create the glistening effect of slime and wetness. Also, to add to the realness, the roof and walls of the sewers (as do the real ones) had to be made to leak here and there. This was accomplished by carelessly strewing tiny rubber hoses, attached to a main feed pipe, about the top of the set out of camera range, and allowing them to drip and dribble as would an ordinary leak.

By placing large nozzles at regular intervals along the base of the "sewer" (tank) the "sewage" was made to flow along the sewer as naturally as could be desired. Came the call for fog and mistiness over the water and along the sides where the sewer-dwellers lived—and what was to be done about the whirlpools which were surely essential to present a true picture of the drains?

Simulating Sewer Fog

The fog (a mixture of crystal oil and dry ice) caused a problem, as it had a tendency to thicken and hide the actual water running through the channel. Either the water would be picked up by the camera minus the fog or the fog could be seen but not the water. No happy medium could be reached showing the two together. Experiment followed experiment until it was learned that milk in the water lightened it and made it visible. Therefore, gallons and more gallons of canned milk were dumped into the flow to lighten it up for scenes in which there was no fog. And under the spell of a heavy fog, nigrosine was added, thus blackening the water and making it visible through the mist and the haze. Hence, the visibility of the fog was ascertained. But the problem of holding the fog down on the water wasn't so easily remedied and it took practically a half day (a lifetime to a studio budget!) to solve this dilemma. To "drag" the fog through the entire length of the passage, the fog machine discharged the mist into one end of the "sewer" and a huge suction machine at the opposite end pulled it right on through the set. Then, too, it showed a tendency to lift, raising to the great heat of the overhead lights necessary to the shooting of the scenes. To be natural, fog does not lift from the water and this was finally overcome by placing sizable chunks of dry ice beneath the water at the place of action but out of the camera's range, reducing the temperature of the critical zone. The cold held the fog down to the water's level.

"Joan of Paris"

"The Most Beautiful Garbage in the World!"

The whirlpools became realities by means of separate hoses and nozzle ends placed in close proximity beneath the water level at the chosen spot. The flow from each nozzle chased the water around in a circular direction, thus creating as natural a whirlpool as ever did swirl in the actual sewers of Paris. Garbage which floated so realistically through the water was caught up in the artificial whirlpool and swirled around with the water giving the exact effect called for by the script and director. The garbage, by the way, was cause for some comment, too, as it had to meet the requirements of the California laws of sanitation. Yet, to create an exact replica of the famous structure, garbage was a "must." Therefore, the garbage and muck seen flowing gracefully along the sewers in the motion picture, "Joan of Paris," was custom-made by cutting up fresh vegetables (tons of them, literally) every day. It was a daily job so as to prevent any stagnation, and the studio plumbers thought it a fitting time for a joke. The cast came to work one bright morning and found a huge sign tacked over the entrance to the sewer itself which read, "Through these portals passes the most beautiful garbage in the world." Signed: The Studio Plumbers!

Add to this man-made refuse the occasional whirlpools swishing the much around as it flows merrily on its way, the man-made leaks, and the heavy, low-lying fog, and the combined effect is one that would surely make any fugitive from the era of sewer-dwellers feel right at home.

Some Further Hydraulics Problems

The script called for some action to take place in the streets just above the sewer also, and this six-block set was built out on the RKO ranch, a good fifteen miles away from the sound stage on which the sewers themselves were erected. All of the street scenes are done in the rain and required the rain equipment to be installed for "the duration."

The Editor's Comments

Deferred Maintenance

LET'S talk about this thing which we call Deferred Maintenance. We are hearing the term more and more of late, wherever water works operators gather for discussion. This is evidence that Deferred Maintenance is on the minds of the majority of water works managers. In fact, it is beginning to give a number of the forward thinking superintendents and managers more concern as the months go by and the maintenance schedule is getting further and further behind. And those who have been brought up on the principle that "a stitch in time may save nine" are beginning to weigh the question of the ultimate cost of some of those jobs that may require the nine "stitches."

It is interesting to look back about a year in this matter of maintenance in the water utility field. When the P-46 Order of W.P.B. was displaced by the U-I Order of the Office of War Utilities, with its greater restrictions as to use of materials in the maintenance of distribution systems, the voice of waterworks managers was raised in objection to the too severe curtailment of materials required for maintenance and replacements. On the strength of such objections, which in some instances were conveyed to the W.P.B. in the form of resolutions passed by water works associations, the office of War Utilities held hearings to which water works operators were invited. Further, a questionnaire was sent to representative privately operated water companies in an effort to determine the validity of the complaint. The returns indicated in general that the larger properties could even do with less maintenance and repair materials than the U-I Order allowed. In the case of the smaller properties the utility could "get by" or perhaps would be a little short on normal expected maintenance and replacement requirements. In view of this there was promised by O.W.U. that limitations would be eased up a bit for the benefit of the smaller water works and those which had let normal maintenance work go undone during the latter half of 1942 as an assuredly patriotic act. Works operators were assured through utterances from O.W.U. that they would not be denied materials necessary to dependability or safety of supply.

What have been the facts in the case since? The answer comes from O.W.U. after the first year of operation under the U-I Order. It is learned that water utilities over the nation have used something less than 50% of materials for maintenance and replacement which the contested U-I Order permitted as a "reasonable use" figure. And this is the record, gentlemen—the answer to the contention that the new order was dangerously restrictive in these essential materials.

In the first paragraph of this thesis we said that we could sense at meetings that the forward looking water works managers were showing signs of a little worry over Deferred Maintenance. We can add that expressions coming from spokesmen for the water divisions of O.W.U. indicate, between the lines, that some concern is being felt in that quarter over the possibility that maintenance has been allowed to suffer beyond the dictates of sound economics, if not actually the safety of some systems. This is worth noting, for O.W.U. in fixing the limitations on maintenance and replacement materials pared the quantities down to "war winning" figures. Now, it appears that water works operators have gone O.W.U. one better.

So much for water works. In addition, the effects of Deferred Maintenance have become conspicuously evident at several sewage treatment plants recently visited. While it must be admitted that water works maintenance is of first importance, it strikes this observer that sewage works operators have likewise been over conscientious in respect to the use of materials for plant maintenance. Not the least of these has been the deferment of re-application of protective coatings. As a result relatively new plants are showing too plainly the signs of neglect. It is not enough to say that the materials situation is responsible, for manpower has become more prevalently a problem. While it is perhaps the feeling of many of these plant managers that the accumulation of deferred maintenance is creating employment for the post-war period, isn't there likewise a reasonable limit to which maintenance deferment should be permitted to go. As a forward looking water works executive has aptly said recently, we should forego "polishing maintenance", release as many employees as permissible, bank the savings for post-war spending; *but*, can we longer expect to get by with as sparse maintenance and replacement work in the "stitch in time" category as we have tried to do since Pearl Harbor?

Without knowing how much longer this war will run, and with the easing up of several materials commonly used in water system and sewage plant upkeep, continuation of the "Deferred Maintenance" policy seems economically unsound, if not also ill advised from the standpoint of actual safety.

The Federation Hits a Stride

The Sewage Works Federation at its recent successful Chicago Conference hit a stride. This meeting was the best attended of any in the Federation's history. In addition it could be considered the best all-around of its meetings on several scores. Not the least of these was the fact that the convention actually yielded a financial profit to the Federation, the first time that this has happened.

The successful meeting came at the end of a highly successful year in which the membership growth was the greatest recorded and the financial status of the Federation so markedly improved as to warrant fulfillment of cherished hopes of the Financial Advisory Committee (Budget Committee) and the Board of Control ever since organization. At the end of the third year the financial back-log was such as to permit the full time employment of Secretary Wisely—and establishment of full time staffed headquarters offices.

This forward step represents a real stride in the affairs of the Federation and big things can be predicted from the live-wire full time operations that are to ensue for the Federation and the *Sewage Works Journal* under "Pete" Wisely's management.

Much is to be accomplished with the situation as it stands, in which each Member Association in the Federation is a "law unto itself", so to speak. This circumstance is the only fly that we can see in the progress ointment. We have said before, and repeat again, that the work of the Federation manager (and the Board of Control) is to be limited in several respects until there is brought about some semblance of standardization of constitution, member grades, and annual dues by the several Member Associations which now make up the Federation. However, Rome wasn't built in a day!—Nor, in three years, either.

MEETINGS SCHEDULED:

Nov. 18-20—FORT LAUDERDALE, FLA. (Governor's Club Hotel).
Florida Section A.W.W.A. Secretary, A. P. Black, University of Florida, Gainesville, Fla.

Nov. 22-23—ROANOKE, VA. (Hotel Roanoke).
Virginia Section A.W.W.A. Secretary, F. H. Miller, 119 State Office Bldg., Richmond, Va.

Dec. 16—BOSTON, MASS. (Hotel Statler).
New England Water Works Ass'n. Sec'y, Frank J. Gifford, 613 Statler Bldg., Boston, Mass.

Jan. 18, 1944—NEW YORK, N. Y. (Hotel Commodore).
New York Section A.W.W.A. (Mid-Winter Luncheon & War Conference.) Sec'y-Treas., R. K. Blanchard, 50 West 50th Street, New York, N. Y.

Jan. 19-21—NEW YORK N. Y. (Eng. Societies Bldg.).
American Society of Civil Engineers. (Annual Meeting.) Exec.-Sec'y, Geo. T. Seabury, Eng. Soc. Bldg., 29 West 39th St., New York, N. Y.
(Sanitary Engineering Div. Sessions, Thursday, Jan. 20th.)

Jan. 20—BOSTON, MASS. (Hotel Statler).
New England Water Works Ass'n. Sec'y, Frank J. Gifford, 613 Statler Bldg., Boston, Mass.

Jan. 21—NEW YORK, N. Y. (Hotel to be selected).
New York State Sewage Works Ass'n. Sec'y, A. S. Bedell, State Dep't. of Health, Albany, N. Y.
(Joint Annual Dinner of N.Y.S.S.W.A., and the Sanitary Eng. Div. of A.S.C.E., Friday, Jan. 21st.)

Mar. 13-17—ST. PAUL, MINN. (Lowry Hotel).
Minnesota Section A.W.W.A. Sec'y, R. M. Finch, Wallace & Tiernan Co., 416 Flour Exchange, Minneapolis, Minn.

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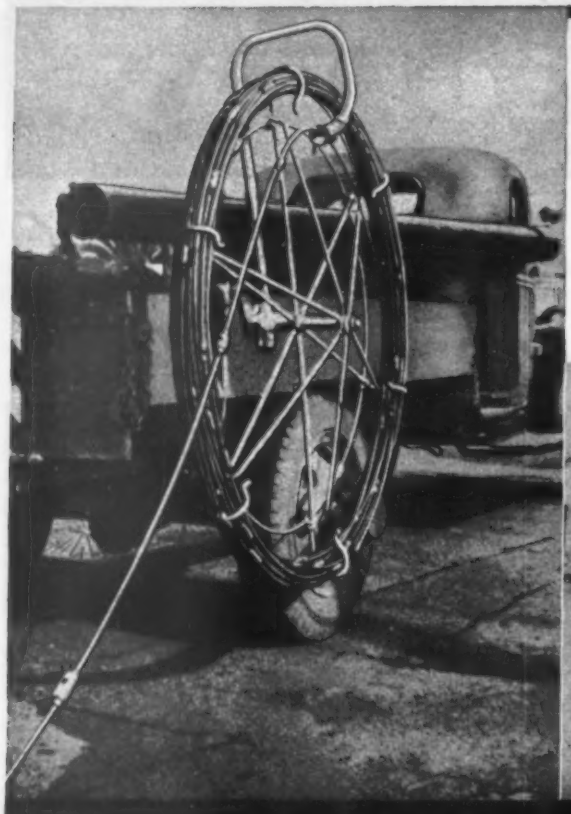

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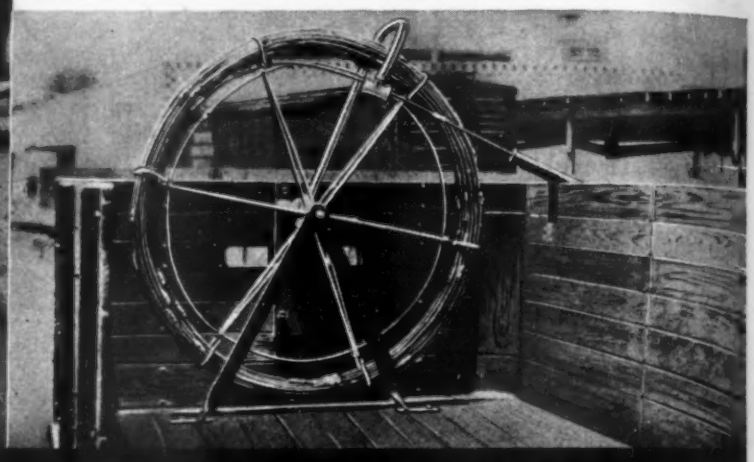

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of Water Works & Sewerage, published Monthly at Chicago, Ill., for Oct. 1, 1943.

State of Illinois, County of Cook, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Edward S. Gillette, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the Water Works & Sewerage and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Gillette Publishing Co., 330 S. Wells St., Chicago 6, Ill.

Editor and Vice-President—L. H. Enslow, 155 E. 44th St., New York 17, N. Y.

Managing Editor—John Cecil Black, 330 S. Wells St., Chicago 6, Ill.

Business Manager—Edward S. Gillette, Vice-President, 330 S. Wells St., Chicago 6, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Gillette Publishing Co., 330 S. Wells St., Chicago 6, Ill.
Edward S. Gillette, 330 S. Wells St., Chicago 6, Ill.
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3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is —. (This information is required from daily publications only.)

EDWARD S. GILLETTE,
Business Manager.

Sworn to and subscribed before me this 27th day of September, 1943.

(Seal)

KITTIE C. WOULFE,
Notary Public.
(My commission expires Feb. 7th, 1946.)

*Here and There with "Doc" Symons**

"Doc."

SOME TIME ago we called attention to the "sin" of non-registration of persons attending conventions. We now present another malpractice which we fervently desire to eliminate. We refer to the presentation of papers by reading "because the time is short" or "because it is easier for me to read than speak," or "because I don't want to leave anything out," or for any other "because."

When it required forty-three minutes at the APHA meeting for a person to read a paper allotted twenty-five minutes at most, it was obvious that such stupidity should be called to account and the argument answered that nothing should be left out in reading the paper "because it was all so important." To the speaker every "a," "an," "the" and "but" was important. To the listening audience it was an ordeal. To the non-listening audience it was an excuse to talk to neighbors. To the speaker that followed it was an affront.

Rising to the occasion, the following speaker briefed his remarks and left the audience with a much better idea of what he desired to present than did the whole forty-three minutes of droning delivery. The offending author apparently had never heard the dictum that "No souls are saved after twenty minutes." After that the converts begin to revert to the devil—or walk out, in this case.

Maybe every word was important to the author, but when he had finished, his listeners remembered most vividly, first, that he had become tiresome; secondly, that the next speaker had been deprived of his full time; and thirdly, that the program had been made to run well into the lunch hour.

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*Associate Editor.

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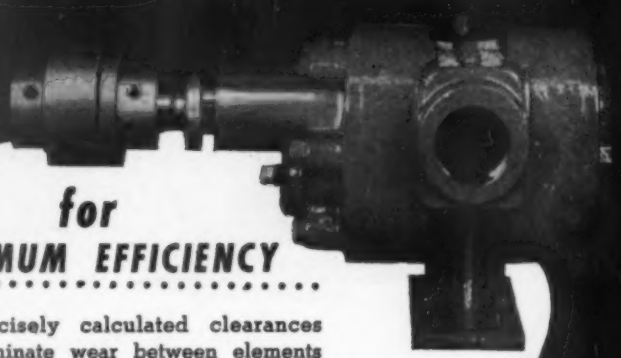


for
MAXIMUM EFFICIENCY

Precisely calculated clearances eliminate wear between elements and assure maintenance of initial efficiency throughout the serviceable lifetime of a Quimby Pump.

QUIMBY PUMP COMPANY
INCORPORATED

STEWART SEWER CLEANING EQUIPMENT
MACHINES LEASED OR SOLD

WOODEN & STEEL SEWER RODS • STEEL TAPES

ROOT CUTTERS • SEWER CLEANING BUCKETS • CABLE

JUMBO NO. 10 HEAVY DUTY WOOD RODS

Made of Selected Hickory with strong Malleable Iron Couplings, in 2½, 3, 3½ and 4 ft. lengths. Triple Lock, impossible to buckle or uncouple in the sewer. The tongue and groove feature eliminates wear on hook, increasing the length of service.

FREE TRIAL — THE RODS MUST PAY FOR THEMSELVES

Write today for Complete Catalog

MANUFACTURING SEWER CLEANING EQUIPMENT SINCE 1901

★ ★ ★ W. H. STEWART ★ ★ ★

P. O. B. 767 • Syracuse, N. Y.

who appears on a technical program is not an orator, and we know that some are not polished writers, but we also know that they have something of interest to say. But they should say it in a reasonable length of time; certainly within the time allotted. If they cannot talk from brief notes, then they should prepare a briefed synopsis of the main points and eliminate the details. There are other methods of effective presentation and we favor a wider adoption of their use.

We can hear a muttered response, to wit: "OK, smart one, how would you do it?" If that murmur grows to so much as a whisper, we'll offer to appear on any program to tell several ways to do it.

* * *

From the NEWWA News Bulletin comes this: "*NEWWA Absorbs Harry (AWWA) Jordan.* At the luncheon . . . AWWA Secretary Harry E. Jordan was notified of his election as an Honorary Member of NEWWA; the conferring of this well-deserved honor coming as a complete surprise to Secretary Jordan. Is this only a first step toward absorption of the AWWA by its New England, shall we say, prototype?"

* * *

We saw recently where the Smithsonian Institute has acquired a neat display of steam pipe corrosion and boiler scale and their effects and prevention. D. W. Hearing Co. of Chicago was the donor.

* * *

At the Federation meeting in Chicago we edited "The Federation Daily" for the second time. May we quote a few "gems" from that paper?

"We had a letter from Lt. Col. Arthur Morrill recently. He used to be at Detroit, remember? Now located in India, Art writes: 'I have been having a very interesting time. For five months I worked on general camp sanitation, including mosquito control. About the latter I now talk glibly, among the uninformed, about Anopheles minimus and distinguish male from female mosquitoes at five feet. Most of the water plant superintendents here never heard of pH and one, at least, thought it meant permanent hardness. In India the cow is sacred, but not the purity of water supplies.'

"What a convention—614 registrations at least. And the information you have been waiting for is that Central States again won the man-miles contest. First four leaders: Central States, 192 members, 27,070 miles; New York, 40 members, 25,240 miles; Pennsylvania, 17 members, 8,600 miles; Ohio, 23 members, 3,700 miles.

"We stopped at one table at the banquet where there were six past presidents of something or another entertaining one charming lady. Will the six please take a bow!

"Of course, you all attended the banquet and heard that 'Pete' Wisely is going to be the new full time Secretary, Editor and Advertising Manager of the Federation. A triple threat man—but who else? And you know that the next year's meeting is in Pittsburgh.

"Bart Marshall said it, 'This is the best convention the Federation has had.' We echo!"

* * *

While visiting our friends, neighbors and allies across the longest unfortified border in the world, we were pleased again with the delightful hospitality of the Canadian Institute of Sewage and Sanitation. We were pleased, too, to learn of a new practice in the matter of entertainment of registrants by manufacturers' representatives.

The idea is simple. There is no individual entertaining of registered (or unregistered) guests in any private rooms. All manufacturers band together and share the expenses of the entertainment of all guests. Refreshments are available at one location only and at stated time only. The refreshment stand is not open during sessions or during the banquet hour. In return, the officers of the section close the meetings promptly at 5 p. m. for the social hour extending until dinner at 7, when the "bar" is closed promptly. After the banquet entertainment, which is also furnished by this same group of manufacturers, the social hour resumes until 2 a. m.

The system has several advantages. Every manufacturer's representative has the opportunity to meet and talk with every person attending the meetings. Strangers do not foist themselves on some manufacturer's hospitality and stay far into the night wearing out a welcome they did not deserve, or disrupting the sleep of the "peddler" or his neighbors.

The cost of the entertainment is surprisingly low for all participants, much lower than many individual concerns have hitherto experienced. There is no straggling out by the audience to drop into someone's room. The general level of the evening's activities is raised. But the main feature is that it works well and everyone, including all the manufacturers, say they would not return to the original method of private entertaining.

* * *

If you needed fresh water at the

How much will your Royer cost?

THE Royer Sludge Disintegrator is a self-liquidating investment, paying for itself through sales of sewage sludge fertilizer which is in demand today as never before. The true answer to the cost question, therefore, is not the price of a machine but how long will it take the Royer to repay its cost. Even if your community is a small one, fertilizer sales will pay for the machine in a surprisingly short time.

Let us assume your plant produces as little as four tons of sludge a month, and after converting it into fertilizer with the Royer sells it for only $7.00 a ton—which would be the *least* you could expect. This monthly income of $28.00 would pay for the Royer model required for such a volume in less than ten months. Where the amount of sludge is greater and the income proportionately greater, the time required to liquidate the investment is even less.

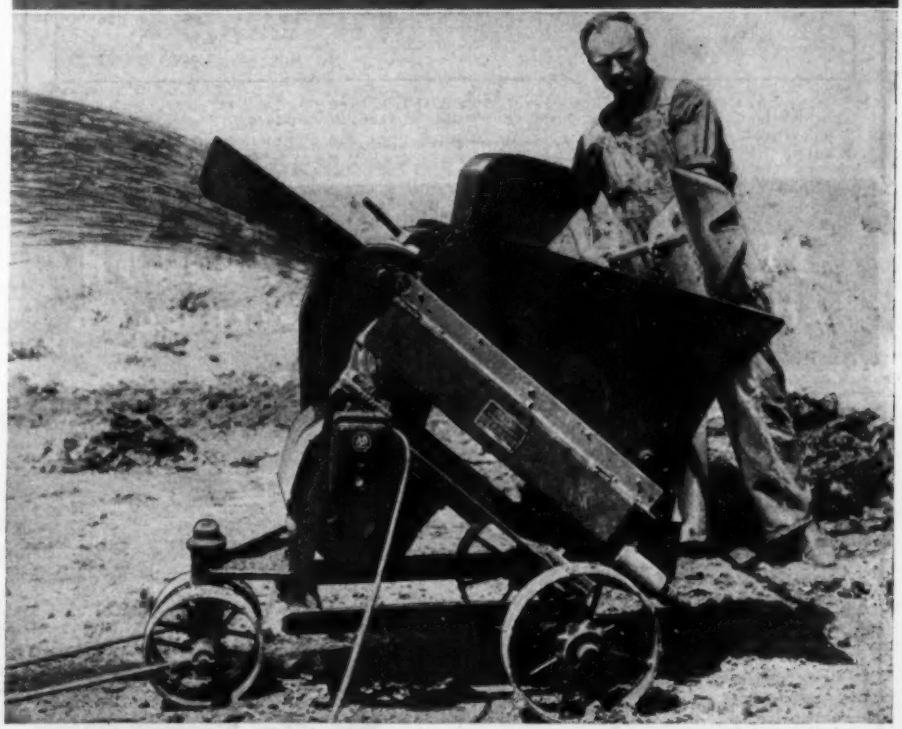
Shoveling the sludge cake into the machine is all the labor required. The Royer thoroughly shreds, mixes, aerates and further dries the sludge; discharging it onto pile or truck in granular form which makes an excellent fertilizer or top dressing. Enrichening chemicals may be mixed with the sludge to make a high strength fertilizer that brings a higher price per ton.

Royers are available in twelve stationary and portable models; and in sizes for every sewage plant: electric, gasoline engine or belt-to-tractor driven.

Write for new "Sewage Sludge Utilization Datalog."

THE ROYER

Below: Royer Model "NSC-4" at Palo Alto, Calif., Sewage Treatment Plant.



ROYER FOUNDRY & MACHINE CO.
170 PRINGLE ST., KINGSTON, PA.

Cincinnati Saves With

TENNESSEE CORPORATION Ferri-Floc

Through accurate feeders like this one pass 3,600,000 lbs. of FERRI-FLOC every year, saving the City of Cincinnati more than $17,000.00 on its annual water bill.

Here is a brief review of the studies that led to the finest clarified water Cincinnati has ever had and, at the same time, sliced the municipal budget.

Cincinnati takes its raw water from the Ohio River, which at this point is very aggressive, making pH correction essential. When in conjunction with pH correction, Alum provides a very poor coagulation unless lime is introduced immediately prior to filtration or immediately after filtration. Consequently, lime and copperas were used for years; but the following difficulties were always evident:

1. Caking in storage bins.
2. Absolute necessity of feeding lime at ALL times.
3. A slightly smoky and faintly colored clarified water.
4. Uneven feeding of the copperas used as coagulant.

These ever-present difficulties led the Municipal Water Works of Cincinnati to undertake a series of experiments to find a more satisfactory coagulant. In the course of a year's research, several coagulants were tried; but FERRI-FLOC was found not only to overcome all previous difficulties but also to produce a superior coagulated water at greatly reduced costs. Findings are given in the following table:

Ferrous Sulphate		Coagulant A		Ferri-Floc		Cost	Saving
Dosage gr./gal.	Turbidity ppm.	Dosage gr./gal.	Turbidity ppm.	Dosage gr./gal.	Turbidity ppm.	$/mg.	
1.25	5.0					1.78	
		.87	4.3			1.57	.21
1.25	5.4					1.78	
		.63	4.0			1.13	.65
		.63	4.0			1.13	
				.63	4.0	.88	.25
		.75	4.0			1.35	
				.75	4.0	1.04	.31

It is notable that lower dosages of FERRI-FLOC are required in spite of the fact that its iron content is no greater than that of ferrous sulphate.

The City of Cincinnati is to be congratulated upon the completion of these excellent studies.

TENNESSEE CORPORATION

ATLANTA, GEORGIA LOCKLAND, OHIO

rate of 300 gallons per minute and the nearest supply was 11 miles away, would you pay $9 to have each 40 cents worth of water trucked to you? According to E. T. Roetman, San. Engr. and Chem., that's what the American Visco Corp. does at Marcus Hook, Pa., because of the salt in the Delaware River.

* * *

"Blood is thicker than water," so they say, but water draws men rather close together, too, as we learned at the Four-State Section Meeting in Philadelphia. The story is not recent but it was new to us. A. M. Tawney, Supt. of Ft. Meade Water and Sewage Plants, was once in dire need of some blood transfusions. Two hundred seventeen AWWA members in that section volunteered as donors. There's a lot of water in blood!

MANUFACTURERS' *and* EQUIPMENT News

Penn. Salt Acquires Stotesbury House

Famous Home Becomes Scientific Laboratory

Leonard T. Beale, president of the Pennsylvania Salt Manufacturing Co., has announced the purchase of the famous Whitemarsh Hall and grounds, former residence of the late Edward T. Stotesbury. The building will be converted into a scientific research laboratory and used for scientific institutional purposes solely. No manufacturing or commercial opera-

EDSON
DIAPHRAGM PUMPS

Hand Sizes 2", 2½", 3", 4"
Power Sizes 3" and 4"
Open Discharge or Force Pump
Edson Special Suction Hose
Red Seal Diaphragms
Strainers and Foot Valves
Hose Spanners—Adapters

THE EDSON CORPORATION
Main Office and Works: 49 D St.
South Boston, Mass.
New York: 142 Ashland Pl., Brooklyn

(Photo by Aero Service Corp.)

Whitemarsh Laboratories of Pennsylvania Salt Co.

tions of any kind will be carried on in it. It is planned to set up a staff of about 75 chemists and their assistants to carry on scientific studies for use in operations at various Pennsylvania Salt plants.

Whitemarsh Hall, which is located just outside of Philadelphia, in Montgomery County, contains about 150 rooms, and alterations will be made to the interior of the residence without in any way disturbing its attractive outside appearance. The grounds, including the beautiful gardens, will be maintained as important features for which Whitemarsh Hall is celebrated.

Pennsylvania Salt's research and development staff, with Dr. S. C. Ogburn, Jr., as manager, consists at present of approximately sixty chemists, chemical engineers, physicists, and other highly trained technical men and women. A research and development program is being expanded to cover several new fields and additional staff and facilities are being provided to meet this program.

With the acquisition of Whitemarsh Hall and renovation of the building, together with provision for equipment facilities required, the research and development program of Pennsylvania Salt will be increased and diversified, looking towards the development of new and improved processes and products for both war and postwar use.

Backlund Sales Mgr. Gould Pumps

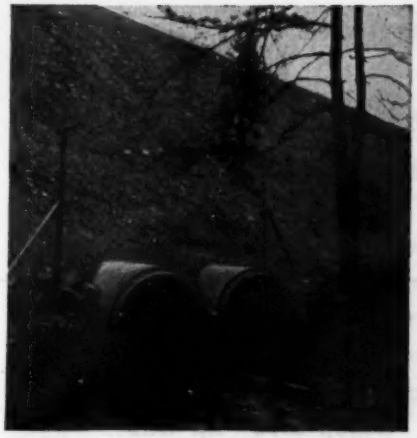
Gould Pumps, Inc., Seneca Falls, N. Y., has announced the appointment of Eric E. Backlund as Sales Manager of the company.

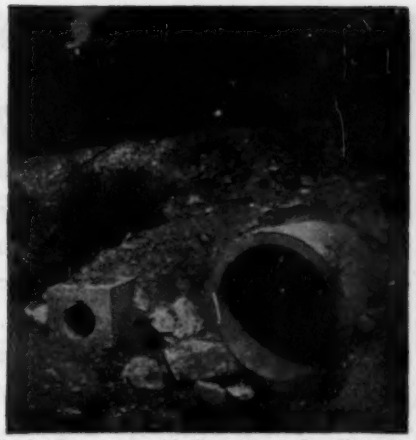
Mr. Backlund joined Gould's in 1923, served as manager of the Philadelphia office, in 1935 was promoted to Assistant Sales Manager, which position he has held until his present appointment.

Hooker Announces Promotions and Appointments

The Hooker Electrochemical Company at Niagara Falls, New York, recently announced the following promotions and new appointments in its Sales Department:

Robert E. Wilkin, Eastern Sales Manager; Lauren B. Hitchcock, Manager of Sales Development; S. I. Anderson, Assistant Eastern Sales Mgr.; S. F. Maclaren, Assistant Eastern Sales Mgr.; G. F. Reale, Special Sales Supervisor; Wm. F. George, N. Y. Dist. Sales Super.; Wm. H. Monsson, Midwestern Sales





Many miles of concrete pipe were used in culverts and the drainage system of the Pennsylvania Turnpike. It serves equally well under heavy or shallow fills.

CONCRETE PIPE

Has many advantages for War or Postwar Projects

Concrete pipe offers outstanding economy and durability for airport, highway or land drainage systems; water lines, culverts, storm or sanitary sewers. It has been used for water, sewerage and drainage systems in scores of military camps, bases and airfields and in war industrial areas.

The smooth interior surface of concrete pipe gives maximum flow. Concrete pipe being accurately concentric can be laid true to line and grade with evenly finished watertight joints.

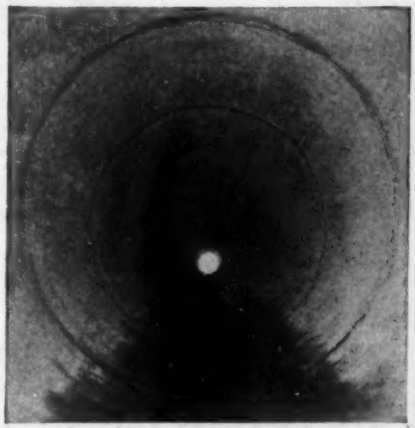
Technical assistance is available to engineers and officials engaged in wartime water, drainage or sanitary projects or who are now planning postwar construction.

PORTLAND CEMENT ASSOCIATION

Dept. A11-29, 33 W. Grand Ave., Chicago 10, Ill.

A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

BUY MORE WAR BONDS



Inner surface of 54-in. concrete pipe culvert under Pennsylvania Turnpike.

STOP JOINT LEAKAGE WITH CARSON CLAMPS

AND MECHANICAL JOINTS

Charcoal iron bolts for Cast Iron Pipe and Fittings. Write for Prices.

Carson-Cadillac Co.

1221 PINSON ST. BIRMINGHAM, ALA.

GASKET AND FORM

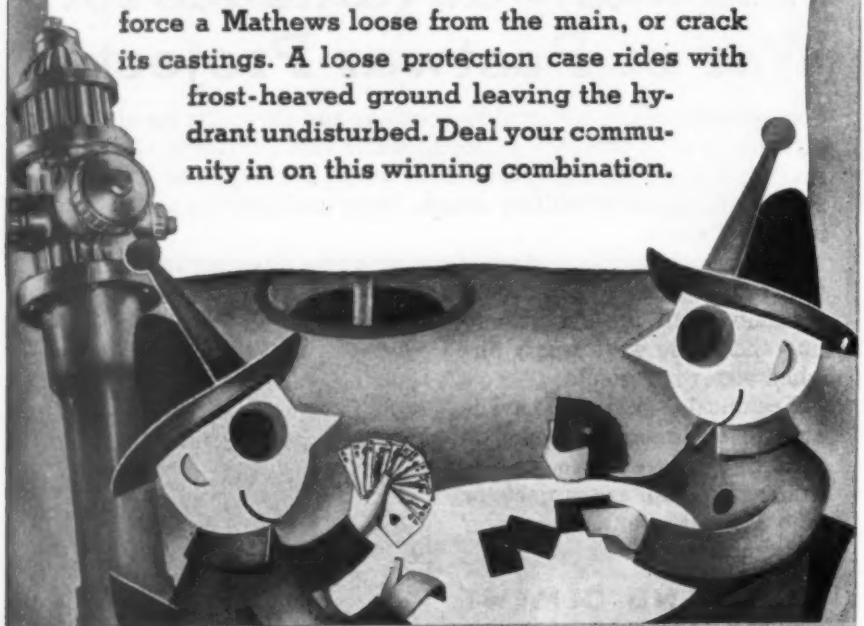
The Perfected Method for Making SEWER PIPE JOINTS OF CEMENT

- No jute used—gasket centers spigot.
- Definite space in each joint for cement.
- Form confines cement-grout to lower portion of joint.
- Particularly advantageous in water-bearing trenches.
- Infiltration minimized.

L. A. WESTON Adams, Mass.

A WINNING COMBINATION . . .

Special Mathews features are a "lay-down" for maintenance economies. All working parts are contained in a removable barrel. This allows accident-repair and overhauls to be made quickly, above ground, and without digging. If damage is serious you merely substitute a spare barrel and take the damaged barrel back to the shop. Another important "trump-card" for this time of year—Mathews Hydrants can't freeze up. A roof-like nut keeps out rain or hose-spray, and a well-designed stuffing box keeps internal water away from the threads. And here's a "trick-taking" feature, too: Cold weather can't force a Mathews loose from the main, or crack its castings. A loose protection case rides with frost-heaved ground leaving the hydrant undisturbed. Deal your community in on this winning combination.



MATHEWS HYDRANTS

400 CHESTNUT STREET, PHILADELPHIA, PA.

ESTABLISHED IN 1808

Made by R.D. WOOD Company

MANUFACTURERS OF SAND SPUN PIPE (CENTRIFUGALLY CAST IN SAND MOLDS) AND R. D. WOOD GATE VALVES

BAILEY METERS AND CONTROLLERS

FOR SEWAGE TREATMENT AND WATER SUPPLY . . .

● Venturi Tubes, Weirs, Flumes, Nozzles and other primary elements; Mechanically and Electrically operated Registers and Complete Automatic Control Systems.

BAILEY METER COMPANY

1672 IVANHOE ROAD ● CLEVELAND, O.

Bailey Meter Co. Ltd., Montreal, Canada

ANTHRAFILT

A Filter Medium For All Purposes

ANTHRACITE EQUIPMENT CORP.

101 Park Ave. New York

H. G. Turner Research Engineer

STATE COLLEGE, PA.

Super.; George J. Bruyn, Office Manager, Niagara Falls.

Mr. Wilkin, with headquarters at Niagara Falls, N. Y., has been associated with the company since 1936 as Assistant Sales Manager.

Dr. Lauren B. Hitchcock, with headquarters at Niagara Falls, N. Y., has been associated with the company since 1935 in the capacity of Consulting Chemical Engineer in the Technical Service Department and in the Research and Development Department.

Dr. Lauren Hitchcock

Samuel I. Anderson, has been associated with the company since 1933. Formerly Midwestern Sales Representative, he has more recently been Regional Sales Supervisor with headquarters at Niagara Falls.

Stanley F. M. Maclaren, joined the research staff of the company in 1929, and served the Hooker Technical Service Sales organization for several years.

G. F. Reale, joined the Hooker Electrochemical Co. as a salesman in 1919, was appointed Assistant to the Sales Manager in 1936 and became Assistant Sales Manager in charge of Heavy Chemicals in 1936.

William F. George, will continue in charge of the New York Office of the company located at 60 East 42nd Street, New York City.

William H. Monsson, has been a member of Hooker's sales organization since 1935.

George J. Bruyn, has been associated with the company since 1924, and for the past four years has been Assistant to the Sales Manager.

Appointments at Gardner-Denver

R. H. Rodolf has been appointed manager of the Pump and Compressor Division of Gardner-Denver Co., Quincy, Ill., following the death of R. J. MacFarland. Mr. Rodolf's connection with the company dates back to August, 1917.

Appointed as Mr. Rodolf's assistant is C. M. George, who joined the Gardner-Denver organization in Quincy in 1929. Up to his recent ap-

pointment as assistant manager of the Pump and Compressor Division, Mr. George had been connected with the General Sales Department of the Gardner-Denver Co.

Diamond Alkali Expands Field Service

Five Heavy Chemical Distributors become a part of the Diamond Alkali Sales Corporation on Oct. 1, in order to more closely correlate the Diamond Alkali field service, sales and warehousing. Consumers Chemical Co., Philadelphia; Tri-State Chemical Co., Memphis and Bermingham; Sunshine Soda Co., Cleveland; Central West Chemical Co., Omaha; and Buckeye Soda Products Co., Cincinnati, are the five companies. Managers assigned to these branches will be C. F. Wolters, Philadelphia; E. A. Jones, Memphis; V. M. Jacobsen, Omaha, and L. W. Wahl, Cincinnati.

Link-Belt Announces Promotions and Acquires New Plant

Link-Belt Co., Chicago, has announced the following promotions:

Mr. Edward J. Burnell, heretofore vice-president and general manager in charge of Pershing Road plant operations and central division sales, has been transferred to the Executive Office in Chicago, in charge of sales for the entire Link-Belt Company.

Mr. Harold L. Hoefman, manager of the company's Atlanta plant, succeeds Mr. Burnell as general manager of the Link-Belt Pershing Road plant in Chicago.

Mr. Richard B. Holmes, district manager at Indianapolis, has been appointed manager of the Atlanta plant, Mr. David E. Davidson, district engineer at the company's Detroit office, has been named district manager at Indianapolis.

Also recently announced is the acquisition by Link-Belt Co. of the manufacturing plant and inventory of Link-Belt Supply Co. in Minneapolis and the appointment of Mr. Ray S. Wood as manager of that plant.

Yeomans' "Rim-Drive" Clarifier Mechanism

At the Federation of Sewage Works Association meeting in Chicago in October, Yeomans Bros. Co. introduced the new "Rim-Drive" clarifier mechanism. Outstanding feature of the new mechanism is the location of the motor, controls and all parts of power transmission on the rim of the tank, thereby saving

SMITH
TAPPING MACHINES

THE A. P. SMITH MFG. CO. EAST ORANGE, N.J.

Symbol of Quality Since 1889

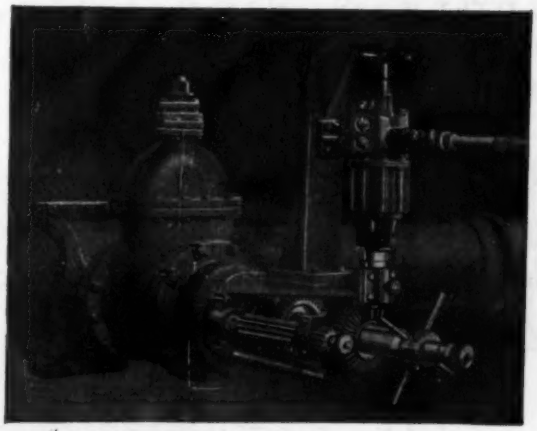
You Can Make a Branch Connection Without Stopping Service

If increased demands for water, due to the National War effort, make it necessary for you to plan new extensions to your existing pipe lines, you can make the necessary branch connection with a

SMITH TAPPING MACHINE

without interrupting the continouus flow of vital water to other points on the same line. These machines are made to make taps from 2 inches to 42 inches. They are easy to make and economical to use and are the most reliable machine for the purpose made.

The larger machines are for rent and we supply supervision in their use. The smaller ones may be bought or rented.



Above: Smith Tapping Machines, for making branch connections to water and gas mains under pressure, have been standard equipment throughout the U. S. since 1889.

OTHER SMITH PRODUCTS
Valves and Hydrants — Valve Inserting Machines — Tapping Sleeves — Tapping Valves — Hat Flanges and Water Meters
Write for Catalog

Branches
1317 Oakley St., Orlando, Fla.
7 So. Dearborn St., Chicago, Ill.
400 Texas St., El Paso, Texas
315 N. Crescent St., Flandreau, S. D.
901 Wm. Oliver Bldg., Atlanta, Ga.
59 Oak Vale Ave., Berkeley, Calif.
514¼ First Ave., S., Seattle, Wash.

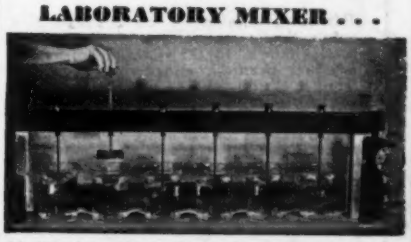
THE A. P. SMITH MFG. CO., EAST ORANGE, N. J.

ZECO
GREENSAND
ZEOLITE

ZECO and HI-ZECO Greensand Zeolite for water softening, filtration and iron removal. ZECO Manganese Zeolite for iron and manganese removal. COREXITE mineral for corrosion control and water stabilization.

ZEOLITE CHEMICAL CO.
Sales Office 140 Cedar St. New York, N. Y. Factory Medford, N. J.
Pioneer Producer of GREENSAND ZEOLITE MINERAL

THE *Phipps & Bird*
LABORATORY MIXER . . .



IS the important piece of equipment in the Modern Water Works Laboratory. Now being used by leaders in water works research. Many superintendents and chemists have been able to reduce their chemical costs by the control of chemical dosages with this mixer. Write for literature.

PHIPPS & BIRD, INC. Richmond, Va.

84" pipe—Spring Lake, N. J.

FLANGED PIPE

FLEXIBLE JOINT PIPE

BELL & SPIGOT PIPE

SPECIAL CASTINGS

SHORT BODY BELL & SPIGOT SPECIALS

Large stock enables us to make prompt shipments.

CAST IRON PIPE

SIZES 2" TO 84"

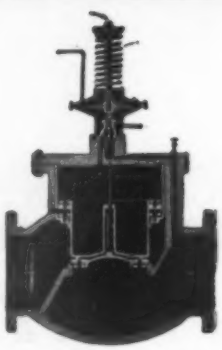
Warren Foundry & Pipe Corp.

11 Broadway, New York

Warren Pipe Company of Mass., Inc.

75 Federal St., Boston

Stop Check Single Acting Altitude Valve



This valve installed in the upstream line automatically maintains a uniform water level within 3" to 12" variation to prevent any tank overflow; also, by means of the internal "stop check" piston assembly, prevents loss or return of storage water back through the valve—making the valve very desirable for use where metered water is purchased, or wherever it is imperative that there be no possible return flow.

This valve may be fitted with "Differential" Control for delayed opening, if desired.

Write for specifications and prices.

GOLDEN-ANDERSON VALVE SPECIALTY CO.
Fulton Building Pittsburgh, Pa.

NO MORE RUST

Will Form Inside Your Steel Tanks If You Use

"RUSTOP"

Immediate, Permanent, and Economical Corrosion Control, as Provided by The "RUSTOP" System, Will Save Many Maintenance and Repair Bills. Equally Important—It Will Indefinitely Prolong the Useful Life of Valuable and Costly Equipment.

NO SCRAPING, PAINTING, *or* SANDBLASTING

Write for complete data for special types of RUSTOP installations

THE APPROVED METHOD

RUSTOP THE CATHODIC SYSTEM OF CORROSION PREVENTION

ELECTRO RUST-PROOFING CORP.
DAYTON • OHIO

over 95 per cent in torque demand and accomplishing real economy.

Power, as applied at the rim, takes full advantage of the lever arm principle. With the reduced torque demand, lower maintenance cost and less wear are possible. Other cost

reducing features are the elimination of bridges and walkways, and costly reduction gear assemblies.

Bulletin 6710 describes the "Rim Drive" in greater detail and presents for the first time the new Yeomans' "Auto Skimmer" and "Auto Flusher" for primary clarifier tanks.

For further information on this new equipment write Yeomans Bros. Co., 1433 Dayton St., Chicago 22, Ill.

Allis-Chalmers' Self-Priming Pumps

An automatically controlled valve is a feature of the new Type AO self-priming pump announced by Allis-Chalmers.

Priming of the Type AO pump is accomplished as the motion of the

water throughout the pump runner and the volute passage carries behind it a slug of air, drawing air in the suction passage through the impeller and out through the priming chamber. This hydraulic action lifts the column of water in the suction line and achieves the same results as would a separate vacuum pump. The

Only "Varec" pressure relief & vacuum breaker valves give you all these Specific features!

● HYPERBOLIC STATIC-BALANCED PALLETS insure less "blow-down."
● PALLET GUIDES are not exposed to corrosive tank vapor.
● GREATER FLOW CAPACITY Expanding streamlined passageways eliminate directional changes and eddying currents.
● WIND DRIFT is eliminated by scientific design.
● NONCORROSIVE AND NONELECTROLYTIC ACTION Materials are used having best thermal, electrical potential, and noncorrosive factors in combination.
● GREATER DURABILITY Materials and design insure longer life.
● REPLACEABLE SEATS guarantee minimum maintenance expense.
● FIELD PRE-TEST All "VAREC" equipment is pre-tested to actual field installations.
● FOOL-PROOF Pallet guiding system positively prevents binding or freezing.
● NONFREEZING Drainage throughout the unit is complete—no condensate can accumulate.
● WEATHERPROOF Properly protected against all kinds of weather, mud-dobbers, birds, etc.
● TWENTY YEARS EXPERIENCE is built into every unit.

"VAREC" approved Pressure Relief and Vacuum Breaker Valve with Flame Arrester. Fully streamlined, with hyperbolic pallets, this valve operates always at its predetermined true static pressure.

● The Safe Venting of Digester and Gas Holder Domes is the job this valve performs, 24 hours a day, year in and year out. Its efficiency, performance, and economy are attested by thousands of installations throughout the country plus years of research and laboratory experiments.

In full cooperation with the war effort in conserving critical materials, "VAREC" Vent Units are available in semisteel in all sizes. Trim may be had in bronze or aluminum, Bakelite, or other nonmetallic materials.

THE VAPOR RECOVERY SYSTEMS CO.
Consultants, Designers, and Manufacturers of Gas Control and Tank Equipment
COMPTON, CALIFORNIA
Branch Offices and Stocks Carried at New York City—New Orleans, La.—Houston, Texas—Tulsa, Okla. Agencies Everywhere.

priming valve closes slowly during this process, acting against a spring tension which governs the rate of priming and the static height of the priming suction lift. The automatic closing of the valve after complete priming prevents water from bypassing back to the suction chamber.

The pump impeller has an unusually thick vane with rounded inlet edges, permitting the pump to pass stringy materials and fairly large solids.

A complete line of the self-priming pump, from 1 to 6 inch size, is planned but only 2 inch and 3 inch sizes are ready for immediate sale. The entire line of pumps will range from a very small capacity to 1400 gpm and up to heads of 100 feet or over. The self priming device incorporated in these pumps is also adaptable to use with other pumps, particularly the single suction type. Further details may be obtained by writing Allis-Chalmers Co., Milwaukee, Wis.

Novel Proportioning Equipment for Corrosive Liquids

Cochrane Bulletin No. 2985-A describes an ingenious and simple method of proportioning acid solutions to water supplies. Accuracy is obtained without moving parts by air actuation. There are many advantages to the system, the operation of which is explained in the bulletin which may be obtained from the Cochrane Corp., 17th and Allegheny Ave., Philadelphia 32, Pa.

Geo. I. Wright, New Representative Automatic Control Co.

In the October issue of The Rambler, house organ of the Automatic Control Co. of St. Paul, Minn., appears the announcement of the appointment of George I. Wright, 807 Commercial Trust Bldg., Philadelphia 2, Pa., as representative in eastern Pennsylvania and central New Jersey. In the same bulletin appears an announcement that automatic remote control for elevated tanks is now available in a rugged, weatherproof housing, suitable for outdoor mounting.

New Small Capacity Oil Reclaimer

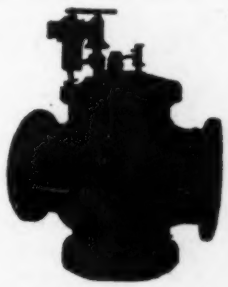
A new small capacity lubricating oil reclaimer, designed for small plants and operating trucks and motor cars, is now being manufactured by the Youngstown Miller Co., Sandusky, Ohio. In addition to reclaim-

· 1879 ·
ROSS
AUTOMATIC VALVES

ALTITUDE VALVES • SURGE • RELIEF • BACK PRESSURE VALVES

ALTITUDE VALVES
for
Control of elevation and heads into and out of tanks, basins and reservoirs.
1. Single acting.
2. Double acting.
3. Combination assembly for three or more automatic operations.

COMBINATION VALVE
Combination automatic control both directions through the valve.
A self-contained unit, with three or more automatic controls.



REMOTE CONTROL VALVE
Electric remote control—solenoid or motor can be furnished.
Adapted for use as primary or secondary control on any of the hydraulically controlled or operated valves.

FLOAT VALVES • REDUCING AND REGULATING VALVES

ROSS VALVE MFG. CO.
INCORPORATED
P. O. BOX 595, TROY, N. Y.

DOW
FERRIC CHLORIDE
35-47% SOLUTION
Shipped in Tank Cars
60% CRYSTALS
Packed in 300 or 500 lb. Barrels
★ SLUDGE CONDITIONING
★ SEWAGE COAGULATION
★ WATER PURIFICATION
THE DOW CHEMICAL COMPANY
MIDLAND MICHIGAN

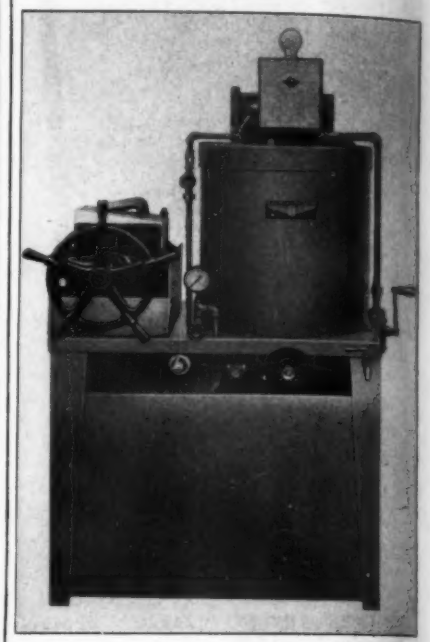
★ THE NATIONAL METHOD • OVER 35 YEARS EXPERIENCE ★
GUARANTEED TO RESTORE 95% ORIGINAL CAPACITY
DEFENSE DEMANDS
FULL CAPACITY MAINS
MANY cities that now find their water supply resources sadly overtaxed by the additional thousands of water users in defense industries and nearby army training camps, are turning to the NATIONAL METHOD of water main cleaning as an economical means of improving water service.
Cleaning by THE NATIONAL METHOD restores clogged mains to at least 95% of their original carrying capacity, making unnecessary large expenditures for auxiliary pipe lines, increased power at the pumps, new standpipes, etc.

Before Cleaning

After Cleaning
The NATIONAL METHOD
The National Water Main Cleaning Co.
30 Church St. New York
Branches:
115 Peterboro St., Boston, Mass.
910 William-Oliver Bldg., Atlanta, Ga.
7103 Dale Ave., St. Louis, Mo.
1817 Castellar St., Omaha, Neb.
406 Fla. Theatre Bldg., Jacksonville, Fla.
205 W. Wacker Dr., Chicago, Ill.
501 Howard St., San Francisco, Calif.
2028 Union Ave., Montreal, Can.

ing lubricating oils of a motor fleet, this reclaimer can also handle a limited quantity of waste lubricating oils drained from equipment used in the plant or manufacturing processes.

With a capacity for purifying eight gallons of dirty oil in 70 to 90 minutes, this machine has a two-stage filter press, is semi-automatic, operating under thermostatic control, and utilizes common refinery earths available on the open market. For handling larger quantities of lubricating or hydraulic oils, these units



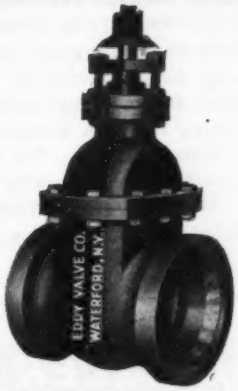
are made in seven other sizes. All models are designed to restore used oils to substantially the same values of fire, flash, viscosity, color, neutralization number, precipitation number as the new parent oil. Further information may be obtained from the Youngstown Miller Co., Sandusky, O.

New Electronic Boiler Feed Water Control

Combustion Control Corp., Cambridge, Mass., announces FIREYE Electronic Feedwater Controls Series P156N, for maintaining constant boiler water levels automatically, and for guarding against low water hazards. Designed to provide the average power plant with low cost automatic control, the equipment eliminates difficulties encountered with complicated mechanical devices, and is guaranteed for an unlimited service-free life.

For automatic feedwater pump control and low water protection, FIREYE Type P156N is used with Probe Fitting Type H53, as shown

EDDY
FIRE HYDRANTS
AND VALVES—
WATER WORKS EQUIPMENT



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For
Water Works
and
Sewage Disposal
Plants

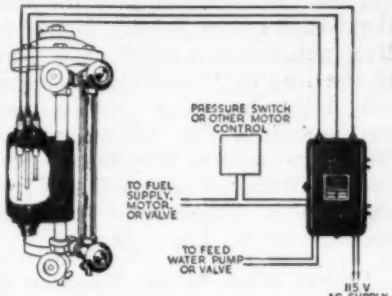
EDDY VALVE CO.
Waterford, N. Y.

EDDY FIRE
HYDRANTS
For Fire
Protection
Service

*Write for
Complete
Catalog*

Eddy
VALVE COMPANY
WATERFORD, N. Y.

in the accompanying illustration. The probe fitting may be mounted parallel to the water column, or directly on the boiler, and is wired to the electronic control. There are three probes, of which the top and middle probes determine the high

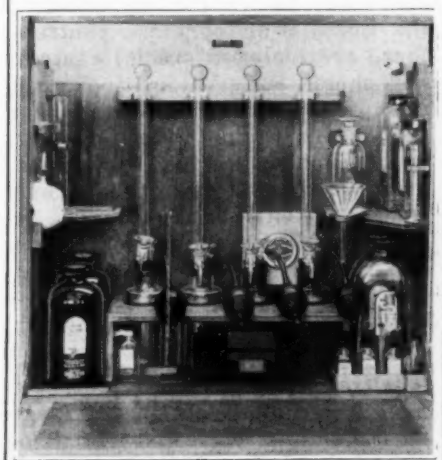


Probe Fitting — Electronic Control

and low levels at which the boiler feed water pump is turned on and off to maintain constant water level. The lowest probe defines the danger point below which boiler water must not fall. Should water drop below this safety probe, FIREYE immediately shuts off the fuel supply and sounds an alarm. Types are available also for automatic pump control only, or for low-level protection only. Further information may be had from Combustion Control Corp., Cambridge, Mass.

Compact Water Testing Set

A new test set for boiler water control analyses has been announced by W. H. and L. D. Betz of Philadelphia. The test set includes all the necessary apparatus and chemicals



for the determination of hardness, alkalinity, chloride, sulfite and phosphate. A portion of the opened cabinet door forms a convenient acid-resistant laboratory work table and a fluorescent light provides correct illumination for the tests. A complete instruction book is included informing the operator how to perform the simple rapid tests.

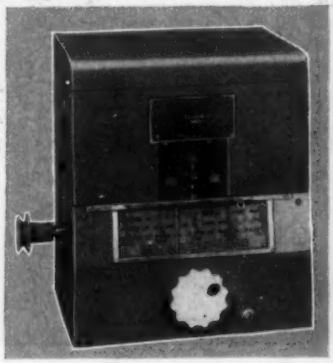
–YOU CONTROL FEED BY ADJUSTING SPEED WITH

VAR-I-FEEDER!

By merely turning a small handwheel on the front of the machine, until the needle on the illuminated dial points to desired rate of speed, you control Var-I-Feeder dosage.

Furthermore, there's no guess work in the answer the dial gives you. Set it for 2.1 gallons per hour and you GET 2.1 gallons per hour. Many accuracy tests have proven this fact.

The Var-I-Feeder hypo-chlorinator is made in both stationary and portable models, constant rate or proportional type controlled by water meter.



SAFETY FEATURE: Operator makes dosage changes on handwheel or timer setting, obviating necessity of handling moving belts. Note mechanism is entirely enclosed.

CHEM-FEEDS-INC.
77 RESERVOIR AVE., PROVIDENCE 7, R. I.
Tuff Corydon
President

HYDRO-TITE

HYDRO-TITE — The self-caulking joint compound that makes cast iron water pipe joints — strong — tight — flexible and everlasting. Used on thousands of miles of pipe with a record of more than 30 years without a failure.

•

FIBREX — The sanitary paper packing that is used like braided jute. Free from bacteria — treated with a water repellent —put up in 60 pound reels. 70 pounds of Fibrex takes the place of 100 pounds of braided jute.

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HYDRAULIC DEVELOPMENT CORPORATION
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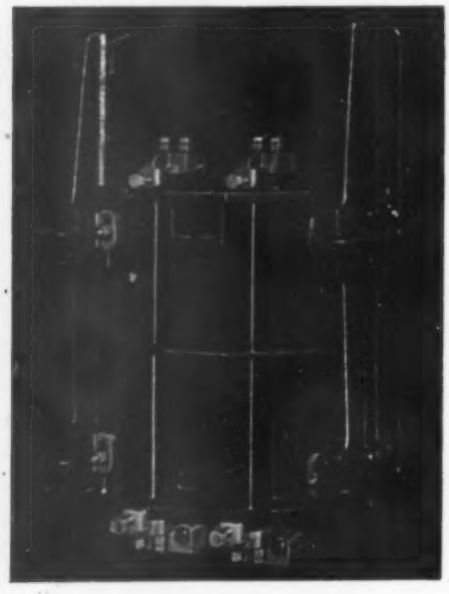
DRY BRAIDED
Fibrex



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Distinguished by precision workmanship

If you haven't seen a National Sluice Gate you can't appreciate its unusual combination of giant strength and velvet-smooth operation. Finest materials, ample sizing, painstaking workmanship and assembly assure you of a gate which really shoulders the load. Send for descriptive literature.

NATIONAL MACHINE WORKS
1559 N. Sheffield Ave., Chicago 22, Ill.

LITERATURE AND CATALOGS

Westco Industrial Pumps are presented in Catalog No. 43 of the Pomona Pump Division of the Joshua Hendy Iron Works. This catalog has been designed to give the story about each of the Westco pumps but also included is a brief description of the line of Pomona pumps used especially in water supplies and well pumping. The catalog is issued free on request to The Joshua Hendy Iron Works, Pomona Pump Division, 206 E. Commercial St., Pomona, Cal., or St. Louis, Mo.

Climax Blue Streak Engines are the subject of a series of five new bulletins (Nos. S326, S327, S328, S329 and S330). The engines described, all of which find application in sewage treatment plants, are the models R81, R61, R41, V12 and N4B. Each bulletin contains information on selection data, description of the engine, performance curves, and detailed specifications. These bulletins, which are of timely interest in connection with postwar plans in sewerage developments, are obtainable from the Climax Engineering Co., Clinton, Iowa.

Controls is the title of a 28-page catalog No. 943 of the B/W Controller Corp., Birmingham, Mich. Featuring the All-Electric Floatless Liquid Level Control, the catalog marks the 10th anniversary of the company which has pioneered floatless controls. In addition to describing the primary equipment such as electrodes, relays, etc., required for the installation of these controls, there are included special controls and panels, A.C. Automatic Starter and Relay combinations, Selector Switches, Special Relays, Waterproof enclosures, and wiring diagrams. B/W systems of liquid level control are effective to within ¼-in. variation in any fluid that is an electrical conductor. A copy of Cat. No. 943 may be obtained from the B/W Controller Corp., Birmingham, Mich.

Jeffrey Equipment for Water, Sewage, and Industrial Waste Treatment Plants is presented in Catalog 775 of the Jeffrey Mfg. Co., Columbus, O. In its 39 pages are presented pictures, diagrams, descriptions and features of Mechanically Cleaned Bar Screens, Sewage Screening Grinders, Industrial Waste Screens and Dewatering Conveyors, Scraper Grit Collectors, V-Bucket Type Grit Collectors, the Jeffrey *Jigrit* Grit Washer, a Biofiltration System, Primary Settling Tanks, Secondary Set-

A CONVENIENCE YOU WILL WANT

H-10401

There are lots of places where additional water outlets can save you a lot of time and money. The MUELLER Sprinkling and Flushing Hydrant offers an ideal solution to such a problem. Designed for installation with the lid flush with the ground, there are no obstructions to trip pedestrians, impede vehicles, or damage lawnmowers. Ideal for golf courses, airports, sidewalks, loading platforms, warehouses—anywhere a concealed hose connection is desired. The model shown is especially designed for southern latitudes where there is no danger from frost . . . The hose valve has a special iron body with brass trimmings. The heavy cast iron curb box gives ample protection. Sizes 1" and 2". Check your needs today!

MUELLER CO.
DECATUR, ILL.
FOUNDED 1857

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ELEVATED STEEL TANKS

Designed, fabricated and erected to meet your municipality's exact requirements. A complete range of types (hemispherical bottoms—hemi-ellipsoidal or toroidal bottoms—double-ellipsoidal designs) and sizes (from 5,000 to 5,000,000 gallons) for maximum performance and economy. Write for Bulletin No. 101.

PITTSBURGH • DES MOINES STEEL COMPANY
Pittsburgh, Pa. . . . 3412 Neville Island
Des Moines, Ia. . . . . 913 Tuttle Street

No Shortage of IDEAL RECHARGEABLE STORAGE BATTERIES for FLASHLIGHTS

OUTLASTS 400 DRY CELLS!

While dry cells are drastically restricted, you can buy IDEAL Rechargeable Storage Batteries for flashlights. Can be recharged again and again at convenient intervals, providing an "always fresh" battery and a bright, steady, dependable light.

CHARGERS . . .
Plug into any light socket.

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Write for Bulletin F.B.B. 1242.

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VALVES
HYDRANTS
AND WATERWORKS ACCESSORIES

M & H products, including pipe line accessories, are well known for high quality of material and expert workmanship. They are made according to standard specifications and have been used for many years throughout the country. Write for Catalog No. 34.

M & H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

tling Tanks, Cross-Collectors for primary or final Settling Tanks, Scum Removal Mechanisms, Drive Units for settling tanks, Chemical Feeders, Garbage Grinders for dual disposal plants, Elevating and Conveying Machinery, and the Floctrol Process Equipment for floculation control in clarification. Catalog 775 or other additional information on the above equipment may be obtained from The Jeffrey Manufacturing Co., Columbus 16, Ohio.

The Yeomans Guard, a bi-monthly publication of The Yeomans Bros. Co., contains a "Bulletin Forecast" in the September-October issue. These bulletins are No. 6710 on Yeomans "Rim Drive" Clarifier Mechanism, No. 6201 on Sewage Pumps made by Yeomans, and No. 6552 on a Water Wheel Sewage Distributor. This issue of the Guard also contains an interesting discussion on "Psychology in the Sale or Purchase of Sewage Pumps." The Yeomans Guard is "gladly sent without charge when it is requested on a company letterhead." Address requests to Yeomans Bros. Co., 1433 Dayton St., Chicago 22, Ill.

The Graver Tank & Mfg. Co. of Chicago has just issued three bulletins. **Rotary Distributors** is the title of one bulletin in which the design, features and installations of the Graver distributor are shown. **Digestors and Gas Holders** for efficient sewage gas collections and storage are shown and described in the second bulletin. **Clarifiers** for sewage treatment as designed and built by Graver are shown in the third bulletin. Features include the flexidrive mechanism, special skimmers, and the "scumtrol" selective cycle system for scum removal. All three bulletins suggest that the reader write for detailed literature to the Graver Tank & Mfg. Co., East Chicago, Ind.

Peerless Pumps Serve All War Fronts proclaims the front cover of the large, attractively produced Bull. No. 154 of the Peerless Pump Div. of Food Machinery Corp., Los Angeles. Replete with photographs of amphibian tanks, auxiliary navy craft, submersible ship pumps and battle scenes, the bulletin exemplifies its caption. Also shown are views of actual installations of various Peerless pumps, as well as photo drawings showing the operation principles of these pumps.

Bulletin B-141 of this same company shows water and oil lubricated turbine pumps and describes the features of each. Cut-away drawings show the features and operation of these pumps. Also shown is a wide

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The Pioneer Self-Caulking Material for C.I. Pipe

Proven value and satisfaction

Yes, Leadite is the original Self-Caulking Material for jointing bell and spigot water pipe.... Over 40 years' continuous use has demonstrated that it saves in material, labor and time.

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MORSE BOULGER
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on all Problems of
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Whether your problem of water rectification is large or small, we have a form of equipment to serve your needs. We manufacture and install equipment for Gravity Filtration and Softening Plants; Pressure Filters and Zeolite Softeners; Swimming Pool Recirculating Appliances; and Water Treatment Units of all types.

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607 COLUMBIA AVE.
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VOGT BROTHERS TRAFFIC MODEL FIRE HYDRANT

A.W.W.A.

VOGT BROTHERS MFG. CO. Incorporated LOUISVILLE, KY.
MAIN AT 14th
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VOGT MFG. CO., Incorporated LOUISVILLE, KY.
P. O. BOX 1122

AERO-MIX AERATOR—MIXER

A Size and Type to Fit Your Problem in Water or Sewage Treatment.

WRITE FOR INFORMATION

choice of pumps and heads, including "Moturbo," "Belturbo," "Gearturbo" and Hi-lift design, as well as other special heads and the Peerless Hydro-foil Pumps. Bulletins B-141 and 154 may be obtained from the Peerless Pump Division, Food Machinery Corp., 301 W. Ave. 26, Los Angeles 31, Calif.

"SterElators" by Everson captions Bull. No. 1093 of the Everson Mfg. Co., Chicago. Containing cutaway drawings and descriptions of the function and operation of the SterElator, the 8-page folder presents three different types of Everson chlorinating equipment. These are Type F, Type O and Type K units for capacities up to 100-500 and 3,000 lbs. per day, respectively. A complete diagram of the chlorine control apparatus is shown with a discussion of controls, metering devices, control valves, solution introducers, and safety features. Bull. 1093 may be obtained from the Everson Mfg. Co., 214 W. Huron St., Chicago.

Despatch Laboratory Ovens are shown and described in Bulletin No. 105 of the Despatch Oven Co. These ovens are applicable in a number of industries, but in the field of water and sewage treatment they will find use in laboratories where suspended or total solids are determined. Uniformity in the oven temperature, control accuracy, long life, convenience, and compactness are several of the features which make these ovens particularly useful in water and sewage laboratories. Various sizes are available. Further information on these ovens described in Catalog No. 105 may be obtained from the Despatch Oven Co., Minneapolis, Minn.

Durametallic Packings of several varieties and types are shown and described in a catalog-bulletin of the Durametallic Corp., Kalamazoo, Mich. Types of packing manufactured by this company include: "Durametallic," a flexible metallic packing; "Dura Plastic," a plastic semi-metallic packing; and "Dura Seal," a rotary mechanical seal that rotates with the shaft, sealing centrifugal and rotary pumps working in gritty or corrosive liquids or gases. Also listed in the catalog are an oil pressure unit, and flexible packing hooks. For use in gritty conditions as in the case of sewage sludge pumps, the company recommends a "Dura Plastic" Type B packing made up of combinations of Durametallic and Dura Plastic die molded rings.

For this bulletin-catalog and further information on recommended packing for water and sewage use, write the Durametallic Corp., 2104 Factory St., Kalamazoo (24F), Michigan.

SAVE MONEY USE ACTIVATED ALUM and BLACKALUM

STUART-BRUMLEY CORP.
516 North Charles St.
Baltimore Maryland

Valdura Heavy Duty Maintenance Paints are the subject of a new catalog just issued by the American-Marietta Co., which covers the complete line of this type of paints. Fully illustrated, the catalog provides application suggestions, product descriptions and technical data in complete detail. Attractively printed in two colors, it is easily handled and filed. The maintenance man or purchasing agent can plan his paint requirements and know the characteristics of drying, coverage and application by using this handy Valdura ordering catalog, which may be secured from the American-Marietta Co., 43 E. Ohio St., Chicago.

Dividends from Your Power Plant is the title of a 48-page booklet written in a language for executives so that they might understand the principles governing the economical operation of steam-generating equipment, even though they have not had extensive engineering training. The booklet discusses such subjects as the dollar and cents importance of boiler efficiency, the relation between steam costs and profits, natural versus mechanical draft, carbon dioxide, carbon monoxide, excess air, and factors that govern labor costs in the boiler room. Not a sales bulletin, the booklet is being distributed by the Preferred Utilities Co. as a service to boiler owners, in hope that it will help to reduce steam costs and help to realize benefits of more reliable operation of boiler room equipment. Copies of "Dividends from Your Power Plant" may be had without charge by writing the Preferred Utilities Co., Inc., 33 W. 60th St., New York, N. Y.

How to Keep Flow Meters Accurate is Reprint 28 by Wm. C. Bennet of the Cochrane Corp. This is an eight-page manual on flow meters and how to install and keep them accurate. Copies may be obtained from the Cochrane Corp., 17th and Allegheny Ave., Philadelphia 32, Pa.

"Lightning," a new motion picture by General Electric, is described in Bulletin GEA-4056. The silent, 16 mm. film available on request is described with projection suggestions, and highlights of the motion picture are presented in this Bulletin GEA-4056, obtainable from the General Electric Co., Schenectady, N. Y.

Hardinge Thickeners and Clarifiers are pictured and described in Bulletin 31B of the Hardinge Co. of York, Pa. These thickeners, may be made of various materials and installed in tanks from 6 to 100 feet in diameter. Tanks may be of wood, concrete or metal. Double spiral scraping assemblies or segmental scraping assemblies may be used depending on the design of the tank and problem involved. Bulletin No. 31B may be obtained from the Hardinge Co., Inc., York, Pa.

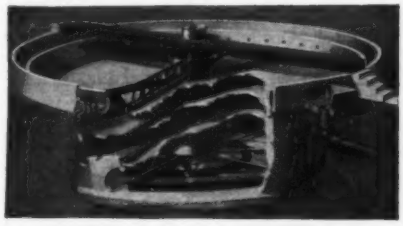
"If It's Piping, See Flori" is the title of an interestingly illustrated booklet just issued by the Flori Pipe Co. of St. Louis. It covers the various uses of piping and lists present market prices for every conceivable kind and size of fabricated piping which finds application in power plants, tank factories, paper mills, water plants, filling stations and all other plants where fabricated piping can be used to convey gas, air, oil, steam, chemicals, etc. This book, useful as a handy reference, may be obtained by writing to Dept. S-11 of the Flori Pipe Co., St. Louis, Mo.

Synthetic Rubber—Is the subject of a brochure produced by the United States Rubber Co., which recently placed in operation the world's largest synthetic rubber plant at Charleston, W. Va. This booklet, "The Five Commercial Types of Synthetic Rubber," has been called the first technically accurate statement of the over-all synthetic rubber situation which can be understood by the layman. This brochure traces the development of synthetic rubber from its laboratory beginnings, describes the properties of the various commercial synthetic rubbers, and relates briefly the part played by United States Rubber Co. in their development, manufacture and use in its products.

The publication includes photographs of synthetic rubber manufacture, many diagrams, and a chart compiled from the experience of plants and laboratories of the company, giving the relative physical and chemical properties of natural rubber and of the five types of synthetic rubber.

Heretofore it has only had a limited distribution to government agencies and allied industry. Cited for study by several of the foremost technical schools and colleges of the country, it is now made available free upon application to the United States Rubber Co., Synthetic Rubber Div., 1230 Sixth Avenue, New York City.

Timers, Relays, and Switches by Cramer are shown and listed in Condensed Catalog No. 1 of the R. W. Cramer Co. of Centerbrook, Conn. The catalog describes the functions of many different types of timers and also mentions for just what application the particular timers are generally used. This is a complete catalog in spite of condensing and should be helpful to any person interested in automatic timing equipment. Catalog No. 1 may be obtained from the R. W. Cramer Co., Inc., Centerbrook, Conn.



P.F.T. Clarifiers for Rapid Precipitation of Sewage Solids

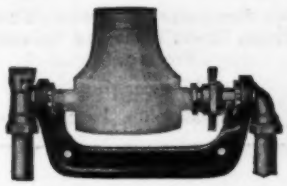
The P.F.T. Tray Clarifier embodies a design which affects the continuous rapid separation of the solids and liquid in sewage; and the immediate removal of the clarified effluent. A series of shallow settling areas over which the sewage is spread assures speedy precipitation. Its high rate of flow provides maximum capacity in minimum space; reducing the construction and operating costs of clarification equipment.

Write for Bulletin No. 210 containing complete information, including operating results.

P.F.T. Pacific Flush-Tank Company
4241 Ravenswood Ave., Chicago, Ill.
New York Charlotte, N. C.

FORD YOKES

Before the FORD YOKE there was no yoke for water meters. In pioneering this development it was Edwin H. Ford's firm conviction that every meter deserved more consideration than to be installed in a service like any fitting or piece of pipe.

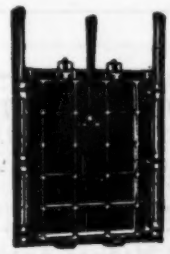


Now, with the trend more strongly than ever toward greater accuracy and more frequent testing, the easy and trouble-free accessibility of a water meter set in a Ford Yoke makes this proven and perfected setting device even more worth while.

It will pay any water works to investigate and consider carefully the many advantages Ford Yokes have to offer.

FORD METER BOX CO.
WABASH, IND.

RODNEY HUNT



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Metal or timber sluice gates of all sizes and designs, approved by engineers everywhere. Improved gate stands and hoists for hand or motor operation. Also flap and mud valves, shear and filler gates, trash racks and rakes. Dependable canal equipment from dam to tail-race since 1840.

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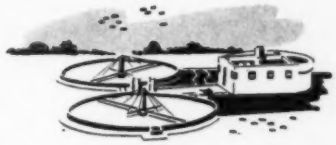

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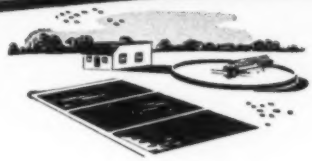

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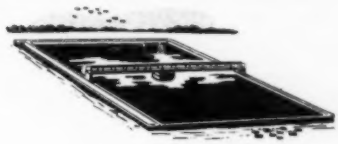

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